COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

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NEWSPAPER

AT&T: Monster Or Martyr?

By Bruce Hoard
CW Staff

MIAMI BEACH, Fla. — Depending on whom you believed, AT&T is either an avaricious monster bent on exploiting ratepayers or just an emergent communications competitor fighting off the shackles of overzealous regulators.

Interface '83 coverage continues on Pages 10-13.

Those two opinions bracketed a wide range of comments delivered by a panel of six experts during a session on communications deregulation at the Interface '83 conference and exposition here last week.

Albert H. Kramer, an attorney with the law firm of Cohn and Marks in Washington, D.C., hammered away at AT&T, accusing the world's largest corporation of multiple and heinous offenses.

For instance, Kramer claimed

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Standards Program Jeopardized

Reagan Reconsidering NBS Cuts

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — The Reagan administration said last week it is reconsidering its plan to eliminate most of the National Bureau of Standards' DP standards program.

Under the budget submitted to Congress by the Reagan administration, funds for the NBS Institute for Computer Sciences and Technology would be cut by 70%, leaving it only $3 million in fiscal 1984. The institute would stop its standards development activities and concentrate on adopting appropriate standards for federal use from national and international standards-setting organizations [CW, Feb. 28].

The budget cuts have been strongly criticized by members of Congress, the scientific community and some representatives of the DP industry. At a hearing last week on the proposed ICST budget, NBS director Dr. Ernest Ambler told a House of Representatives science and technology subcommittee that the Commerce Department, the NBS' parent agency, is reviewing "all [Commerce] programs relevant to telecommunications and information systems with the intention of improving cooperative efforts and information exchange and policy planning."

As part of this review, he said, "additional resources for ICST are being discussed within the administration."

At a second hearing on the ICST budget last week, Douglas T. Ross, chairman of the National Academy of Sciences' ICST Evaluation Panel, said that rather than reduce the institute's funds, the government should appropriate at least $15 million for its 1984 activities.

Ross, founder and chairman of Softech, Inc. in Waltham, Mass., said of the White House belief that the

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AT&T Agrees to License Videotex Technology Free

By Phil Hirsch
CW Washington Bureau

MIAMI — AT&T will license its videotex display technology on a royalty-free basis, it was learned here last week.

The news that the company would license its videotex technology at all — permitting work on a proposed North American videotex standard to go forward — came earlier this month from the American National Standards Institute's legal counsel [CW, March 21].

The future of the proposed standard, known officially as the North American Presentation Level Protocol Syntax, had been in doubt because its underlying technology is the subject of pending AT&T patent applications. Ansi rules allow patented technology to be standardized, but only if the patent owner agrees to license the patent on reasonable terms.

Word that AT&T would not charge for licensing its videotex technology was received at a meeting here last week of X3L2, the Ansi

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DP Managers Encouraging Personal Computing . . .

By Marguerite Zientara
CW Staff

"Personal computers networked to a common data base are the future of DP," Tim Sagstetter, DP coordinator for Wausau Metals Corp. in Wausau, Wis., believes. "As soon as full-functioned communications become available . . . we will jump in with both feet.

"The [personal computer] is the key to decentralizing the DP work load," Sagstetter said. "All that is needed for successful implementation is a well-coordinated plan of purchase and support."

That about sums up the prevailing attitude toward personal computers in the work place, judging from a recent mail survey of 500 *Computerworld* subscribers who are DP managers in U.S. firms of all sizes. Two hundred twenty subscribers responded, for a 44% response rate.

To be sure, many DP managers are not as forward-looking as Tim Sagstetter, but a majority of respondents (137, or 62.2%) said they encourage the use of personal computers by end users, whether they are currently using them and whether they are having problems. Only 26 managers said they discourage the use of personal computers, and 30 were indifferent.

Almost twice as many of the firms surveyed have personal computers being used (145) as do not (75) — either stand-alone, remotely linked to a mainframe or a combination of the two.

Respondents usually indicated there are only a handful of personal computers in each company, but 11 firms have over 100 personal computers and three very large companies (24,000 to 90,000 employees) are using several thousand personal computers.

The majority (95, or 65.5% of the 145 personal computer users) have stand-alone personal computers only, and 43

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SPECIAL REPORT

Inside — Micros in Big Business: Opening the DP Window



. . . But E.F. Hutton Rejects Micros for Terminal Net

By Jeffry Beeler
CW West Coast Bureau

SAN FRANCISCO — One of the leading brokerage houses in the U.S. has rejected conventional microcomputers as the chief vehicle for delivering personal computing power to its users.

Although personal computing figures prominently in E.F. Hutton, Inc.'s long-range systems strategy, the company opposes the large-scale installation of personal computers themselves, Hutton's executive vice-president of operations, Norman Epstein, said here last week. Instead, the firm plans to use a network of dumb terminals and time-shared superminis as the cornerstone of its future personal computing environment, Epstein told an estimated 150 attendees at a Fortune 1,000 Personal Computer Market Forum sponsored by Richardson, Texas-based Future Computing, Inc.

Rather than replacing its existing network of 5,000 dumb terminals with large numbers of personal computers, Hutton plans soon to conduct a technological "brain transplant" operation aimed at boosting the termi-

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Please address all correspondence to the appropriate department at Box 880, 375 Cochituate Road, Framingham, Mass. 01701. Phone: (617) 879-0700. Telex: 95-1153.

OTHER EDITORIAL OFFICES & SALES OFFICES:

New York: Suite 7G, 401 East 80th St., New York, N.Y. 10021. Phone: (212) 570-2135.

West Coast: 257 Lytton Ave., Palo Alto, Calif. 94301. Phone: (415) 328-8064.

Washington, D.C.: 880 National Press Building, 529 14th St. N.W., Washington, D.C. 20045. Phone: (202) 347-6718.

England: Bill Dunlop, Stephen Thomas, Beere Hobson Assoc., 345 Goswell Rd., Islington, London EC1V FHN. Phone: 01278 3415/6.

W. Germany: Eckhard Utpadel, CW Publikationens, Friedrichstrasse 31, 8000 Munich 40. Phone: (089) 34-90-61. Telex: 5215350.

France: Patrick Morel, Le Monde Informatique, 42, Avenue Montaigne, 75008 Paris. Phone: 720.85.66.

Japan: Mr. Shohei Kurita, Computerworld Japan, 7-4 Shintomi 1-Chome, Chuo-ku, Tokyo 104. Phone: (03) 551-3882, Telex: 252-4217. Esteban H. Yamada, Tokyo Representative Corp., Yamaguchi Bldg., 2-12 Kanda Jimbo-Cho, Chiyoda-Ku, Tokyo 101, Phone: (03) 230-41178, Telex: 126860.

Australia: Alan Power, Computerworld Pty. Ltd., 37-43 Alexander Street, Crown Nest, NSW 2065. Phone: (02) 4395133. Telex: SECCO AA25468.

Brazil: Eric Hippeau, Data News, Computerworld do Brazil, Servicos e Publicacoes Ltda., Rua Alcindo Guanabara, 25/10th Floor 20031 Rio de Janeiro, RJ Brazil. Phone: (021) 240-8225. Telex: 2130838(WORD BR).

Mexico: Richard Small, Computerworld de Mexico, Oaxaca 21-2, Colonia Roma, Mexico City 7 D.F. Phone: (905) 514-4218, (905) 514-6309.

Spain: Neil Kelley, Computerworld/Espana, Gravina, 13, Madrid 4. Phone: 231-23-85, 231-23-86; 231-23-88. Telex: c/o IDC 46360 Y Madrid.

Denmark: Preben Engell, Computerworld/Denmark, Gammel Strand 50, 1202 Copenhagen K. Phone: 01-1234-11. Telex: 27566 cwdan.

Sweden: Bengt Marnfeldt, Computerworld/Sweden, Nova Media AB, Vartavagen 55, 11538 Stockholm.

Italy: Daniele Comboni, Gruppo Editoriale Jackson, s.r.l., Via Rosellini 12, 20124 Milano.

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IBM Information Network Now Accessible via Telenet

By Tom Henkel
CW Staff

RYE, N.Y. — IBM has announced that its Information Network can now be accessed through GTE Telenet, Inc.'s Telenet public network, a move at least one industry analyst thinks might signal the computer giant's move into the data transmission business.

By adding Telenet access, IBM has expanded to 250 the number of cities from which its remote computing service can be utilized.

In addition, IBM said it has opened three offices for its Information Network in Boston, Minneapolis and St. Louis.

Finally, IBM announced that users of IBM Personal Computers and 3101 terminals who access the Information Network now have full-screen capabilities available to them.

The Telenet-Information Network link is available only to users with asychronous, line-mode terminals. These include IBM's 2741, 3101, 3232-51, as well as IBM's Datamaster and Displaywriter systems and the IBM Electronic Typewriter 85.

In addition, terminals compatible with the Teletype Corp. 33/35 teletypewriter can be used to access the Information Network via Telenet.

The Telenet link is not available to IBM users with systems based on IBM's System Network Architecture, who typically use the Information Network for program development or to pick up applications not installed on in-house systems.

The Telenet connection offers Information Network customers located outside the 13 cities with Information Network offices a less expensive means of accessing the network. Those users previously had to make a long-distance call to an Information Network office to use the network.

There is a surcharge of approximately $6/hour for accessing the Information Network via Telenet.

The Information Network provides three basic remote computing services: programming tools for nonprogrammers; resources such as CICS development aids for DP professionals; and data banks.

The Telenet link could be the start of an effort by IBM to break into the data transmission field, speculated Charles Greco of International Data Corp. in Framingham, Mass. "It's a casual way of getting in . . . without making a lot of ripples," he said.

Ken Bosomworth, an analyst with Information Resource Development, Inc. in Norwalk, Conn., noted the Telenet link makes the Information Network more of a competitor with American Bell, Inc.'s Advanced Information Systems/Net 1000.

Nexis Offering On-Line Access To CW Stories

The stories that appear in *Computerworld* can now be accessed on-line via the Nexis data base service from Mead Data Central, Inc.

Users with a Nexis terminal can access nearly every story published in *Computerworld* beginning with the Dec. 27, 1982-Jan.2, 1983 "Forecast" issue. Subscribers can initiate searches by subject, topic or through almost any word in an article.

For example, if a user was looking for information on "local-area networks," within 15 seconds every story that contained those words would appear in one of three formats: by bibliographic listing, key word in context (the term and about 20 words on either side) or full text, with the most recent story first. The full-text version gives date, length, headlines and dateline, as does the key-word search.

In addition to CW, Nexis' data base contains more than 60 magazines and newspapers, the *Encyclopedia Brittanica*, *The Federal Register* and nine wire services. The New York Times Information Bank will be available next summer.

More information about the service can be obtained from Mead Data Central, which can be reached through P.O. Box 933, Dayton, Ohio 45401.

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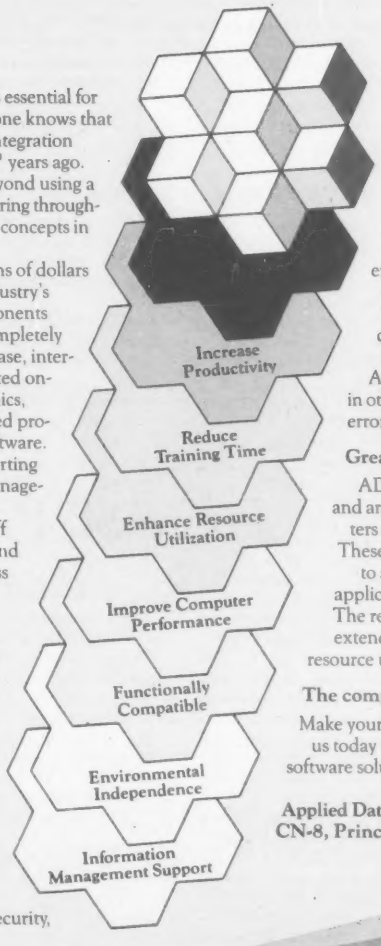
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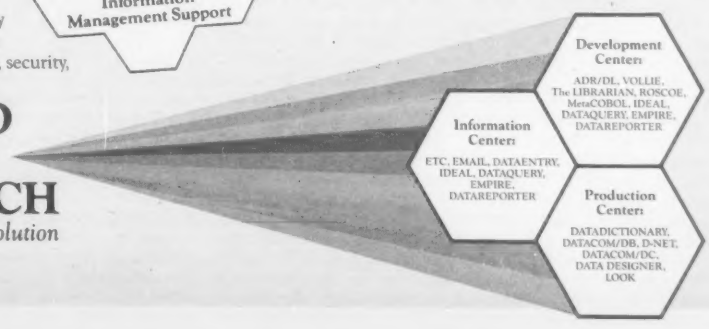
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APPLIED DATA RESEARCH

The one vendor system software solution

Decline of Minis Could Not Have Been Predicted



By Ed Scannell
CW Staff

Pity the poor prognosticators who peered into the minicomputer future three or four years ago and bravely went on record with their forecasts in the pages of *Computerworld* and other trade publications.

As it turns out, all the exponential curves, penetration models, econometrics, retrocasting and other forecasting tools could not have predicted what kind of havoc a protracted recession and the explosive growth of microcomputers would bring to their orderly calculations.

If analysts were overly optimistic in their predictions for minicomputer revenues and shipments for 1980 through 1982 — and they generally were — they had good reason. Realizing the minicomputer market had grown between 25% and 30% in each of the preceding four years (1975-1979), analysts had no reason to believe in 1979 and 1980 that the market would not continue to grow at the same pace for the next three or four years.

And with some of the major minicomputer manufacturers saying they were just beginning to scratch the surface of their market's potential at that point, some analysts felt their 30% growth projections for the early '80s were even a little conservative.

When the sluggish economy forced many users to delay their decisions to buy systems and when the price of microcomputers plummeted while their performance soared past most 16- and some 32-bit minicomputers, those 30% growth projections went from being a little conservative to being wildly optimistic.

One analysis firm that fell victim to the unforeseen growth of micros and the extended recession was Creative Strategies, Inc. (CSI), which predicted that worldwide minicomputer revenues would grow at an annual compound rate of 32.6% through 1984 [CW, March 24, 1980]. However, according to the company's own figures, the revenues for that market grew only 20% in 1981 and 12.5% in 1982.

"I think we underestimated the price elasticity and the snowball effect of the acceptance of microcomputers," said Tim Berry, a market analyst at CSI, explaining why his firm's minicomputer projections were off the mark. Microcomputer "prices came down and their performance went up faster than we thought they would."

CSI had also forecast that superminicomputers would constitute 10% of all minicomputer shipments and 35% of all minicomputer revenues by 1984. While he did not have any 1982 year-end figures, Berry said that at year-end 1981, superminicomputers made up 3% of the total installed minicomputer base and accounted for 15% to 20% of the revenues.

However, Peter Lowber, a senior market analyst at The Yankee Group, said CSI's 10% shipment and 35% revenue figures for 1984 may be too low. "Considering that this year will be the first full year of production for Digital Equipment Corp. VAX-11/730, Data General Corp. MV/4000 and Perkin-Elmer Corp. low-end minis, those revenue figures should be higher," he contended.

'IBM Fighting for No. 2 Mini Slot'

A third forecast made by CSI was that by 1984 "IBM will be fighting for the No. 2 slot in the mini market." According to CSI's 1981 figures, however, the chances of this prediction becoming a reality by next year are slim.

"Last year in a study, they [IBM] were No. 4 behind DEC, [Hewlett-Packard Co.] and DG. And they really haven't done much over the last year to change that," Berry noted.

CSI was not the only analysis firm to overrate IBM's future potential in the minicomputer market. Quantum Science Corp. predicted in 1977 that while IBM would never be the market leader, it would capture a 15% share of the market by 1981 [CW, April 11, 1977].

According to most analysts, this prediction was not even close. For instance, figures from International Data Corp. (IDC) show that at year-end 1981, IBM held a 4% share of the minicomputer market.

But some analysts say IBM's ranking in the minicomputer market depends on what is defined as a minicomputer in their product line, which appears to be no easy task. Some consider the Series/1 to be Big Blue's only minicomputer; others would include the System/34 and even the System/38 as part of IBM's minicomputer offerings.

"You really have to look at the non-IBM market figures and then throw in IBM's figures," noted The Yankee Group's Lowber. "In 1982, equipment figures [for non-IBM minicomputer makers] were $7.1 billion. But if you add in IBM's revenues, it comes to just under $11 billion."

While it was not as far off the mark as CSI, IDC also overestimated the recession-proof capabilities of the minicomputer market when it predicted that worldwide minicomputer revenues "will continue to show healthy, albeit slower growth, increasing 29% each year through 1983" [CW, April 7, 1980].

IDC analyst Aaron Goldberg said his company's worldwide minicomputer revenue figures for the years 1980, 1981 and 1982 show that the market actually grew by 23%, 16% and 20%, respectively, which averages out to 19.6% a year.

IDC also predicted in 1980 that in 1983, the minicomputer market would be worth $13 billion and there would be 235,000 units installed. According to IDC's latest figures, however, by year-end the minicomputer market will be worth $11.8 billion, "which is only off by 5% to 7%, and that is agreeable to us," Goldberg said.

For unit shipments, IDC has pared its original forecast down to 171,800.

"The economy caught us by surprise," Goldberg said. "The mini market looked a little better to us then [1980] — we didn't have supermicros to contend with."

Amdahl Plans Cure for 5860 Performance Lag

By Ed Scannell
CW Staff

SUNNYVALE, Calif. — Amdahl Corp. reported last week it has found a cure for the ills that prevented its 5860 high-end mainframe from realizing its performance potential.

According to Amdahl Marketing Director Wayne McIntyre, users have complained that the system takes too much time to access information from main memory that is not in cache memory when the processor is operating in a supervisor state. The cure consists of a series of engineering changes the company will build into future 5860s; they will be offered free to current 5860 users beginning next month.

Users of the 5860 were told of the system's shortcomings and the upgrades to correct them at a users group meeting last December, McIntyre said. A number of users have already undergone the first round of upgrades and are scheduled for a second round in upcoming months.

Amdahl delivered "a little more than a dozen" 5860s by the end of 1982 and has shipped "substantially more than that number" this year, according to McIntyre.

When the 5860 was announced in November 1980, Amdahl said the $3.8 million machine would have twice the performance of the firm's 470V/8 in typical commercial applications and would be 20% to 25% more powerful than IBM's 3081 Model Group K. However, a series of validation tests conducted last summer before the machine was shipped indicated that when it ran in supervisor state, the 5860 was a little less than 1.7 times faster than the 470V/8.

"We discovered that in supervisor state, there was a higher than expected overhead when data had to be dragged down from main storage that wasn't already in the buffer or the cache. That was one problem," McIntyre stated. "Problem No. 2 was [that] this was occurring more frequently than we thought it would."

The vendor has corrected the problem by reworking "a lot" of the machine's circuitry, enhancing 15 instructions frequently used by the 5860 in supervisor state and reducing the system's cycle time from 24 nsec to 23¼ nsec. According to McIntyre, benchmarks run on the 5860 with the enhancements show the system "is now in the same performance category as the 3081."

The first 5860 shipped, sent to the University of Michigan Computer Center (UMCC) last August, received its first series of upgrades in December. These involved installing new multichip carriers, which UMCC Associate Director Jeff Ogden described as the machine's building blocks, and new microcode.

The enhancements raised the system's processing speed from 1.32 to 1.42 times that of the 470V/8 and increased the number of users the system can support simultaneously from 350 to 420, Ogden said. The second series of upgrades is scheduled for May.

Ogden cautioned that UMCC's system should not be used as a barometer for measuring the effect the upgrades will have on other 5860s because, being the first system shipped, it is at a slightly lower engineering level than "almost any other" installed 5860. Furthermore, it runs under a proprietary operating system, not an IBM operating system.

IBM to Fix Micros On-Site

FRANKLIN LAKES, N.J. — IBM has added on-site maintenance to the service options for its microcomputers. The service is available for both home and commercial users of the Personal Computer and its newly announced XT processor.

Besides on-site maintenance, IBM also offers courier pickup and delivery, carry-in and mail-in service for the micros. The on-site service option, which is being offered in 38 of about 100 cities with IBM service/exchange centers, costs $329 annually for a Personal Computer with 64K bytes of main memory, a 160K-byte diskette unit, monochrome display and printer — about 25% more than the standard courier pickup option.

To use the service, a user would first call IBM's National Support Center and explain the problem. If the center determines that the user has exhausted all self-maintenance options, a repairman will be dispatched, IBM said.

On-site service is available only during regular IBM business hours. The response time for service calls depends on the user's needs and availability of service personnel, according to an IBM spokeswoman.

Cuts in NBS Under Study

(Continued from Page 1)

government can rely on the private sector for standards development: "It simply is not true; it can't be done." The Reagan proposal to cut the ICST budget, he said, "demonstrates a fundamental lack of understanding of what the role and function of ICST is all about."

ICST's "real function," according to Ross, "is rapidly evolving to be more of a center of expertise, a center for information, a technical resource for analysis [and] research and to act as an ombudsman for weak or diffused segments of vendors and users of everything related to computers and their use. No other government or private-sector organization duplicates or can take over this unique role."

Supporting Ross' argument, Florida State Sen. George Stuart Jr., who chairs a committee on the Florida legislature's use of DP, told the House subcommittee the ICST has been invaluable to his state's DP and telecommunications planning. "No single state could afford the luxury of a standards-setting agency," Stuart said. "If the institute were not in existence . . . who would we turn to for these standards?"

License Free For Videotex

(Continued from Page 1)

technical committee developing the standard. During that meeting, Ed Baldwin, the phone company's director of technology licensing, read a legal draft of the licensing terms.

According to Tom Hastings, committee chairman, the draft reads as follows: "Upon request, AT&T will grant nonexclusive royalty-free licenses under its patents to make, have made and use equipment solely to the extent necessary to implement the standard, but on condition that the requester grants to AT&T, for itself and its subsidiaries, royalty-free licenses of the same scope under the requester's patents."

This offer will be submitted to Ansi "within the next few days," Hastings said. He expects AT&T's terms to satisfy Ansi's requirement for reasonable licensing terms.

Hastings said a draft of the proposed standard should be completed by the end of May, as planned. It will have to be considered by several other groups, but final adoption of NAPLPS as a U.S. videotex display standard is likely by next summer.

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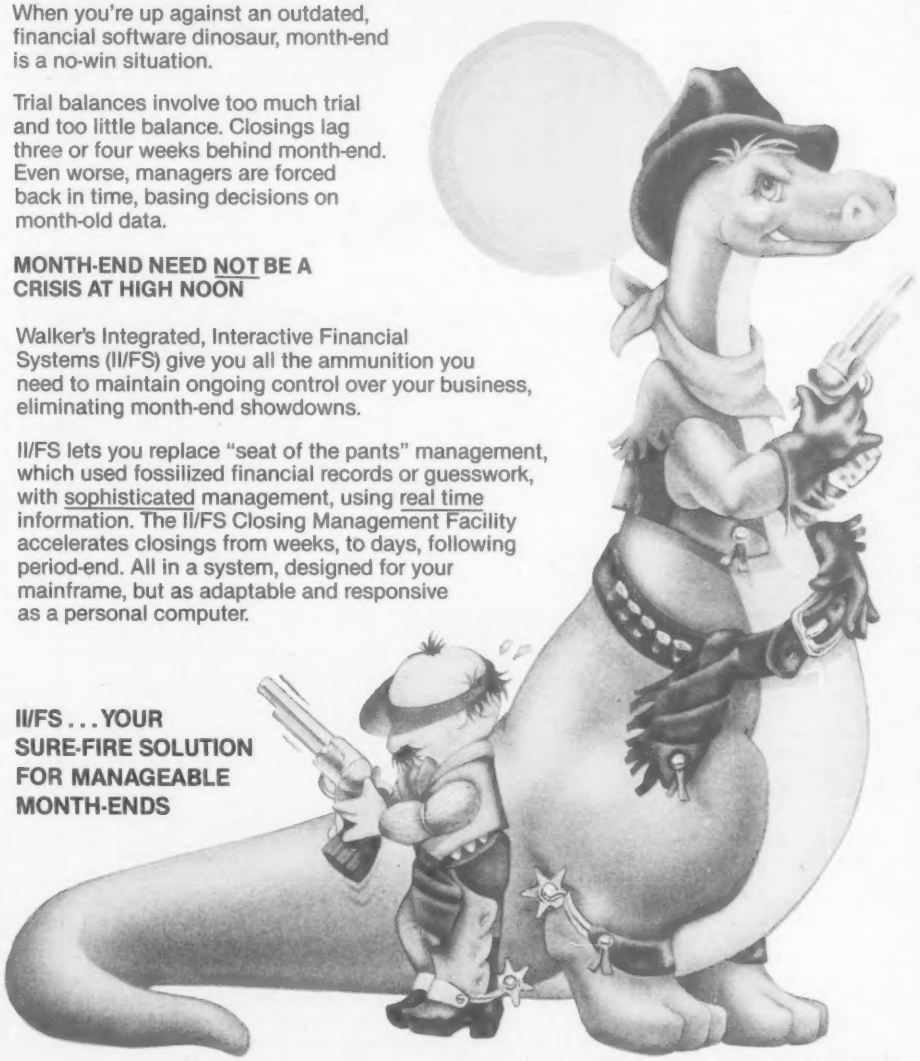
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Rep. Bill Nelson and His Federal DP Crime Bill



CW Photo by J. Bartimo

Rep. Bill Nelson (D-Fla.) reintroduced his computer crime legislation last month in the House of Representatives. The Federal Computer Systems Protection Act of 1983 (H.R. 1092) is an updated version of H.R. 3970, which was introduced by Nelson last season but not passed by the House.

This year's bill would make it a federal offense to tamper with the computers of the federal government, the computers of financial institutions guaranteed by the federal government and computers operating in interstate commerce or using interstate facilities. Such activities would be punishable by fines of up to $50,000 or twice the value of the property stolen, imprisonment for up to five years or both.

Nelson is the author of the Florida Computer Crimes Act, enacted in 1978 when he was a member of that state's legislature. The Florida statute was the first state computer crime bill passed in the nation.

Computerworld *senior writer Jim Bartimo recently visited Nelson in his Washington, D.C., office.*

What effect do you expect H.R. 1092 to have on computer crime?

This bill ... is trying to update the criminal law for a specific kind of new high-technology crime that occurs because of the place of computers in our society. If a lot of the old laws on larceny do not specifically apply, then why not give the prosecutors new tools?

For example, let's say someone steals a tape with a $5 million program on it. Can a prosecutor under existing law prosecute on the value of the $5 million or on the $5.95 value of the magnetic tape?

The first incarnation of H.R. 1092 did not make it though Congress. What's different about this version that makes you think it will pass this time?

This version is basically the same as last year's version. We've tinkered on a few minor things. Basically, when you propose something that is new — state-of-the-art — you have to start an educational process. And so last year we tried to get the issue aired.

In House hearings in September, you received guarded support for H.R. 1092's predecessor from the Federal Bureau of Investigation and the U.S. Attorney General's office. Do you expect to have their support this time around?

Yes, and I don't think it was guarded support. In the testimony before that congressional committee, they came out and said, "We support this legislation." They may not have meant this specific piece, but they were saying that the subject this legislation addresses is one they think needs to be made into law.

Penalties for computer crime historically have been pretty low. Your bill only calls for a five-year prison term. Why is that?

Since we have the punitive provision of many times the loss of value, that is going to hit somebody pretty hard. Up to five years is a pretty punitive jail sentence.

If someone gets into national security-related crime, then there are other statutes upon which they could be given longer prison sentences. We think this meets the kind of penalty that would be a significant deterrent and yet not be judged to be overly punitive.

How would you answer your private-sector critics who call computer crime more of a management problem than a government problem?

I think it's a combination of both. I think it will always be a management problem. But, of his own fallible nature, man will continue to do bad things, and when man does, we have to have some way of saying that that is the kind of activity we want to prohibit in our society.

In private industy, computer crimes are not reported for fear of scandal ...

And that's one of the problems of building enough evidence to say that you need this law. There are a lot of these crimes not reported, but let me say that there are a lot of rapes that are not reported either. But that is certainly not a justification to say that rapes should not be against the law.

I think this bill is another part in the process of informing the real world what is really happening. What is really happening is that these crimes are being committed every day — a lot of which we don't know about — and the severe consequences could threaten the financial integrity of companies, of government, international and national banking transactions, indeed, even the national security.

I assume the bill has been reintroduced to protect government computers and, therefore, government funds. Do you expect it to affect computer crime that does not involve government-related funds and computers?

The enactment into law of this legislation could have a deterrent effect. We know that computers are being used for crime. We know that a lot of states and the federal government do not have the up-to-date law to prosecute this highly sophisticated crime.

How would you control computer crime that does not involve the federal government?

That should be handled by state law, and we've done that in Florida.

What have you learned from looking at the other 18 state computer crime laws? What are their weak and strong areas?

I think there has been a general reluctance in the states for the prosecutors to prosecute under those laws because they know that the law is going to be tested in the courts. So if another statute under which to prosecute is available, they use that one.

So Far, 18 State Computer Crime Laws

When U.S. Rep. Bill Nelson pushed through computer crime legislation in his home state of Florida in 1978, the law was the first to address specifically computer-related crime. Two years later, nine more states had enacted similar laws.

Today, 18 states have passed specific computer crime legislation; by the end of the year, a total of 20 or more laws on DP crime are expected to be enacted.

The following — compiled with information from the U.S. Justice Department's *1980 Legislative Resource Manual*, from information provided by the Computer and Business Equipment Manufacturers Association in Washington, D.C., and from information provided by the National Center for Computer Crime Data in Los Angeles — is a list and description of the 18 current computer crime laws:

• **Arizona.** H.B. 2212 defines types of computer crimes and specifies if the crime is first or second degree. Penalties are five years' imprisonment for first degree felony and 1½ years for second degree.

• **California.** H.B. 66 makes it illegal to use, directly or indirectly, a computer, computer system or network for a crime. It was amended to include programmable calculators. The law calls for penalties of 16 months to three years in prison, fines of $2,500 to $5,000 or both.

• **Colorado.** H.B. 1110 defines the specifics of computer crime, breaking it into misdemeanor and felony offenses. Penalties of less than $50 to just under $200 can be imposed for a misdemeanor and $10,000 or more for a felony.

• **Delaware.** H.B. 730 is based on the Florida computer crime bill.

• **Florida.** H.B. 1305 defines types of computer crimes and addresses trade secrets. Penalties greater than $1,000 can be imposed, depending on the degree of the felony charge. Prison terms of one to five years may also be imposed.

• **Georgia.** S.B. 198 prohibits computer fraud and the defacement of computer systems and networks.

• **Illinois.** H.B. H.1027 makes it illegal to alter computer programs without the consent of the owner. Penalties of $1,000 or less are imposed for a misdemeanor charge and penalties of more than $1,000 are imposed for a felony.

• **Michigan.** H.B. 4112 prohibits computer fraud by defining it as illegal access to a computer. If the violation involves $100 or less, the offender is guilty of a misdemeanor. If the violation involves more than $100, the offender is guilty of a felony that is punishable by imprisonment for not more than 10 years, a fine of not more than $5,000 or both.

• **Minnesota.** S.B. 381 defines the offenses that constitute computer abuse.

• **Missouri.** S.B. 559 relates to computer systems, networks, equipment and suppliers with penalty provisions.

• **Montana.** H.B. 621 defines and prohibits computer-related crimes and imposes a statute of limitations that hinges on discovery of the act.

• **North Carolina.** H.B. S.397 deals with computer access, damages and extortion.

• **New Mexico.** H.B. S.8 makes the misuse of a computer a crime and addresses unauthorized computer use. A penalty of $100 or less is imposed for a petty misdemeanor. A fine of more than $2,500 may be imposed for some felony charges.

• **Ohio.** H.B. 437 expands the definition of the criminal code to cover computer crime.

• **Rhode Island.** H.B. 5775 is similar to California's computer crime law but does not include microwave communications in the definition of computer network. For a felony charge, an offender can be fined not more than $5,000, imprisoned for not more than five years or both.

• **Utah.** H.B. 183 is the Computer Fraud Act, which addresses services, property, computer networks, computer access, financial instruments, software or programs. Penalties between $25 and $300 may be imposed for a misdemeanor charge; penalties greater than $300, but less than or equal to $1,000, may be imposed for a felony.

• **Virginia.** — H.B. 39 defines computer crime as computer or data processing services or data connected therewith that is subject to larceny, embezzlement or false pretense.

• **Wisconsin.** H.B. 744 creates criminal penalties for the modification or destruction of computer programs or systems.

• **Alaska.** This state has a law concerning the fraudulent use of a vending machine, turnstile or computer. More specific legislation is pending.

Brokerage Firm Rejects Micros

(Continued from Page 1)

minals' intelligence, Epstein said. The transplant calls for each of Hutton's 350 branch offices to be equipped with a 2M-byte Data General Corp. Eclipse MV/4000 supermini.

Together, the 350 superminis will connect to the 5,000 dumb terminals and "will give them some additional smarts," Epstein explained. The aim of Hutton's proposed supermini installation effort is to transform the firm's existing terminals into personal computer look-alikes that can offer all of a micro's characteristic strengths with none of its attendant weaknesses.

Acquisition of the DG machines will mark yet another advance in the continuing development of the brokerage house's existing Compass teleprocessing network, which already consists of multiple layers of systems resources. At the apex of the Compass hierarchy is a complex of IBM 3033 and 3083 mainframes, all housed in the company's world headquarters in New York.

On the second level is an installed base of 26 integrated Eclipse mainframes divided among 16 remote sites, including Hutton's 12 U.S. regional offices. On the third level is the firm's distributed information network, which consists basically of the 5,000 dumb terminals.

Now, with the proposed installation of the 350 MV/4000s, Hutton intends to add a fourth processing layer to the Compass network and in so doing "move intelligence down to the terminal level," Epstein said.

The Advantage: Control

The advantage of the company's current teleprocessing scheme is that it maximizes central control, ensures data consistency and readily accommodates future growth. So by preserving its existing terminals and enhancing them with increased local intelligence, Hutton can retain the Compass network's original virtues and at the same time add to its capabilities, Epstein said.

But if the firm were to modify its established systems framework significantly, it would restrict its communications, greatly complicate expansion problems and lose both central control and data consistency, he added. In short, the brokerage house would forfeit many of the Compass network's current benefits.

Why is Hutton bucking what may be the most popular trend in corporate computing?

For jobs that require little supervision and have minimal impact on other corporate operations, personal computers may prove to be an effective way of doing business, Epstein admitted. "But if what you want is integrated solutions, personal computers can be a real problem."

Although microcomputers themselves will apparently play only a minor role in the firm's long-range systems plans, Hutton intends to continue its policy of broadening its users' access to on-line computing resources. "We want to extend personal computing power as far down into our organization as we can go and still maintain central control."

Rejection of Micros Draws Astonishment

SAN FRANCISCO — A controversy erupted last week in the wake of E.F. Hutton, Inc.'s startling announcement here at a personal computing conference that it plans to discourage the widespread in-house use of personal computers.

The disclosure by Norman Epstein, Hutton's executive vice-president of operations, drew potshots from many of the 150 attendees of Future Computing, Inc.'s Fortune 1,000 Personal Computer Market Forum.

A few of the attendees, particularly vendors, reacted to Epstein's disclosure with astonishment. Others voiced serious doubts about whether the firm's personal computer policy could be effectively enforced, especially now when user demand for business-oriented micros is rapidly growing.

Typical of some of the skeptics was James Bandy, manager of new business development for Softech Microsystems, Inc., a licensed supplier of the UCSD P-System program. During a March 23 presentation, Bandy cited evidence to suggest that Hutton's end users may simply ignore their employer's efforts to control the firm's personal computer population and install the machines secretly.

"Our company has just recently signed an agreement with E.F. Hutton to supply the P-System for the hundreds of personal computers the firm has already installed and the hundreds more it now has on order," Bandy said. "I'm not at liberty to say where in E.F. Hutton the systems are going to be installed. I'll let [Epstein] find out for himself."

Bandy's comments came in response to Epstein's March 21 statement that Hutton intends to use time-shared minis rather than desktop micros as the chief medium for making personal computing capabilities available to its users.

Though perhaps unconventional, the brokerage house's strategy for implementing personal computing is by no means unique. A similar plan has also been adopted by the Metropolitan Life Insurance Co., according to president of Future Computing, Dr. Portia Isaacson.

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Judge Gets 600-Page Report

AT&T Responds to Reorganization Critics

By Phil Hirsch
CW Washington Bureau

WASHINGTON, D.C. — AT&T has answered the critics of its proposed reorganization plan by submitting a response of more than 600 pages to federal Judge Harold H. Greene.

The reorganization plan, which would carry out the settlement of the U.S. vs. AT&T antitrust case, must be accepted by Greene before it can be implemented.

One criticism of the reorganization plan addressed by AT&T in its March 14 submission is that the plan will enable the phone company to impose unfair restrictions on users of switched and nonswitched private line services, as well as competing suppliers. AT&T, according to its critics, will be able to limit the user's freedom to choose terminals and services and restrict competing suppliers' freedom to market those products.

AT&T will allegedly gain this power by terminating the subscriber's access line directly in a network interface owned by its Long Lines Division, rather than by a divested Bell operating company. The critics pointed out that a major goal of the government's antitrust case against AT&T was to erase the phone company's end-to-end control over the subscriber's message path.

This was essentially done when Bell agreed in the antitrust case settlement to divest the operating companies that supply the end portions of that path. Critics fear, however, that while the Bell operating companies will own the access lines, AT&T, through its control of the network-side termination, will be able to specify the protocols that must be used and give some users better service than others — for example, quicker response to service calls and better quality access circuits.

AT&T's Answer

AT&T's general answer to this complaint was that network facilities have been allocated on the basis of predominant use. In regard to switched private line services — specifically the Enhanced Private Switched Communications Service and Common Controlled Switching Arrangement — the company said, "There is no question that if a predominant-use test could be conducted, the test would show these switching systems are predominantly used for inter-Local Access and Transport Areas [long-distance] functions."

However, Satellite Business Systems (SBS) saw an inconsistency in the allocation scheme. It pointed out that after divestiture, Bell operating companies will own all of the Class 5 offices that handle local dial-up service, even those combined with Class 4 offices that process long-distance calls. (Class 5 offices are the ones closest to the end user; they are connected, on the network side, to Class 4 offices.)

In the case of Dataphone Digital Service (DDS), the Bell operating companies will own only those hub offices where the bulk of the traffic is locally terminated; AT&T will retain those hub offices handling both local and long-distance traffic.

As a result, the phone company will continue to own about half the 91 DDS hub offices now in service. And although the Bell operating companies will own the other offices, AT&T will own any DDS access line termination facility within those offices that is used predominantly for long-distance traffic. (The reorganization plan refers to these facilities as "points of presence.")

According to SBS and other critics, this means that Long Lines will retain control over most DDS access lines. AT&T's response was that "unlike the case with switching systems, assignment of all of the interexchange DDS hubs to the Bell operating companies would leave no capability . . . to offer unique or distinct services. The interexchange carriers would service only as transmission links."

Opinions Vary Widely on AT&T's Image

(Continued from Page 1)

AT&T is trying to dump its outdated customer premises equipment (CPE) on an unsuspecting market so that American Bell, Inc. will not have to absorb it when the newly formed subsidiary of AT&T assumes responsibility for Bell's CPE next Jan. 1.

"It's the old AT&T migration strategy in reverse," Kramer declared. The migration strategy he referred to alleges that AT&T is forcing its customers to buy new CPE by charging exorbitant amounts of money to maintain older equipment. "You will be offered cheap prices on horse-and-buggy products," he warned.

The attorney asserted that CPE will be sold for less than it is worth and ratepayers will become "unwitting victims of a marketing strategy." They will be victimized because they will have to pay higher rates to offset AT&T's losses on the customer premises equipment, and the CPE they buy will not last for long, putting customers in the position of having to replace it with more expensive equipment in the relatively near future, Kramer claimed.

He also said that the proposed AT&T reorganization plan subverts the "competitive thrust" of the agreement reached by AT&T and the U.S. Justice Department to end the U.S. vs. AT&T antitrust suit.

Lawrence Garfinkel, AT&T assistant vice-president, admitted there will be "confusion" and "a bewildering array" of products and services available in the deregulated communications marketplace, but claimed that AT&T is an ethical organization that only asks that it be allowed to compete on an equal footing with other companies.

"Our competitors can expect tough, fair competition," he stated.

The regulatory process is used by some people against AT&T because they do not want it to be competitive, he maintained, adding that suppliers should be able to compete, not find a regulatory niche that protects them. Deregulation must occur as quickly as possible, but in an orderly fashion, allowing both suppliers and consumers to adjust, Garfinkel said.

In a truly competitive environment, users will be the big winners as companies strive to offer the most sophisticated products and services at the lowest prices, he observed.

J. Robert Harcharik, vice-president of data services for MCI Communications Corp., said whoever controls the transmission facilities controls availability and prices. According to Harcharik, value-added carriers such as Tymnet, Inc. and GTE Telenet Communications Corp. will pay up to seven times more for local line access charges after the final Bell breakup.

The time to make up ground on AT&T is now, during the state of transition, because "AT&T moves slowly and understands monopolistic omnipotence," Harcharik claimed. Would-be competitors should choose highly specialized market areas that shelter them and then plan "relatively small, highly profitable businesses," he advised.

He played down advanced bypass services such as digital termination systems, saying local telephone companies will control local access for years. He also predicted that wideband digital communications will be slow in coming. "Current communications facilities will dominate for many years," he maintained.

The role of public utility commissions will become increasingly important as they are called on to regulate local communications distribution, Harcharik said. He questioned their readiness to assume such a role.

Corrections

International Software Enterprises, Inc.'s multiuser versions of Micro Data Base Systems, Inc.'s MDBS III data base management system for 16-bit microcomputers [CW, March 7] are priced from $3,000 to $10,000. The vendor is based at Suite 400, 85 W. Algonquin Road, Arlington Heights, Ill. 60005.

In "Designer Cuts Processing Time" [CW, Jan. 31], it was incorrectly reported that Database Design, Inc.'s Data Designer runs on Burroughs Corp. and Sperry Univac systems. The package runs only on IBM and plug-compatible processors and Digital Equipment Corp. VAX-11 superminis.

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Short-, Long-Haul Communications Tools Debut

CW at Interface '83

By Jim Bartimo
CW Staff

MIAMI BEACH, Fla. — Both short- and long-haul communications shared the spotlight here last week at the Interface '83 conference and exposition as a cast of local-area networks, modems, multiplexers and controller units made their debut.

Infotron Systems Corp. took the stage with its Infotron Local-Area Network, a ring-topology network that supports up to 2,000 simultaneous connections of synchronous and asynchronous devices at speeds up to 64K bit/sec.

By routing connections through the network, terminals or computer ports can communicate with other compatible terminals or ports. Each termination point can be made without restricting access to a particular port group or computer.

An average configuration is available for $15,000 from the vendor at Cherry Hill Industrial Center, Cherry Hill, N.J. 08003.

Ungermann-Bass, Inc. took its local-area network, very large-scale integration network interface chip set on the road a year after its announcement. Designed for the vendor's Net/One network, the NIU-150 interface chip connects clusters of six RS-232 devices to the network.

Two versions of the chip interface are available, one for 10M bit/sec Xerox Corp. Ethernet-compatible baseband versions and one for CATV broadband versions. The NIU-150 is available for $2,800 from the vendor at 2560 Mission College Blvd., Santa Clara, Calif. 95050.

Avanti Communications Corp. brought out its Ultramux time division multiplexer said to mix voice, data and video transmissions at 10M bit/sec over high-speed digital circuits. Designed for point-to-point communications, the multiplexer can split signals into as many as 128 lower speed communications channels and can take advantage of satellite, microwave and fiber-optic circuits, a spokesman for the vendor said.

The Ultramux will be available in the fourth quarter for $16,000 for a 16-channel system and $42,000 for a 64-channel system. More information is available from the vendor located at Aquidneck Industrial Park, Newport, R.I. 02840.

(Continued on Page 11)

Packages Include IBM CPU Links

MIAMI BEACH, Fla. — A number of communications software packages — many designed to connect microcomputers and workstations to IBM mainframes — were among the plethora of products introduced here last week at Interface '83.

Digital Equipment Corp. announced that it would market an IBM communications package jointly with Polygon Associates, Inc. The package allows batch and interactive block mode terminal access between the DEC Rainbow 100 personal computer and IBM mainframes, a DEC spokesman said.

The Poly-BSC/RJE package enables the Rainbow 100 to emulate the IBM 2780 data transmission and the IBM 3780 data communications terminals. It will be available in May and will be priced from $500 to $595. More information is available from DEC in Maynard, Mass. 01754.

Convergent Technologies, Inc. introduced a package said to allow its distributed IWS and AWS desktop workstations to communicate with IBM mainframes in a network using IBM's Systems Network Architecture (SNA) protocol. CT-SNA features emulation of the IBM 3270 terminal.

The package is available for $40,000 when bundled with the vendor's network gateway. More information is available from Convergent Technologies' headquarters at 2500 Augustine Drive, Santa Clara, Calif. 95051.

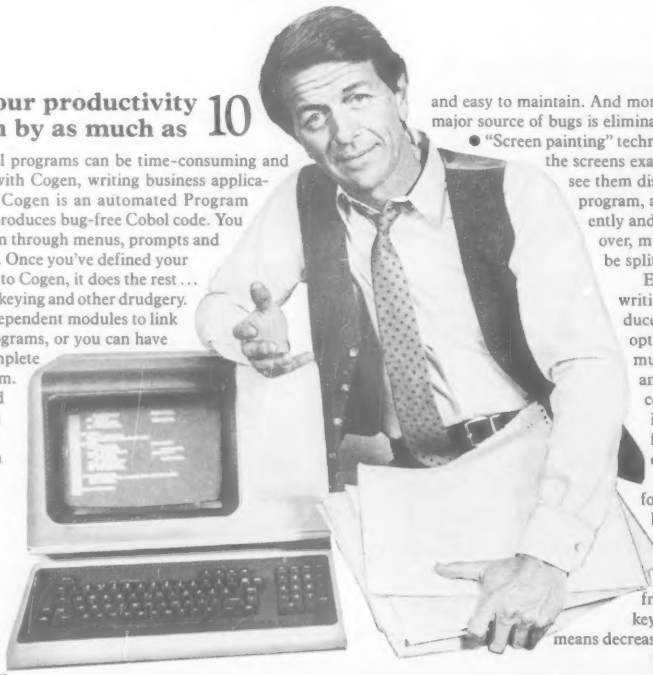
Honeywell, Inc. announced new releases of its Distributed Systems Architecture (DSA) software. Among the releases was Version 3.0 of the DPS6-DSA, a collection of software for networking DPS-6 and Level 6 minicomputers without the need for a mainframe. The DPS 6 may now function as both a switch and an endpoint in a DSA network, a Honeywell spokesman said.

The software is said to offer increased support for value-added networks and public data networks. It is available for an annual license fee of $790 with additional fees for optional modules. More information is available from Honeywell through P.O. Box 8000/T-60, Phoenix, Ariz. 85066.

Votan unveiled its Voice Operating System for its VX Series of voice processing systems and for the IBM Personal Computer. The package is a software design tool for programmers who need to design voice I/O.

One part of the package, the Dialog Builder, allows the programmer to define a dialog, enter voice data and generate and execute code for an application. It is available for $2,000 from the vendor at 4487 Technology Drive, Fremont, Calif. 94538.

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No Longer 'Blue Sky'

Attendees Focus on Micros, PBXs, Local Nets

CW at Interface '83

By Bruce Hoard
CW Staff

MIAMI BEACH, Fla. — Personal computers, voice/data private branch exchanges (PBX) and local-area networks were mentioned regularly last week when attendees at the Interface '83 conference here were asked about the most important trends in data communications.

Those technologies have moved from the "blue sky" category into the real world, the users interviewed indicated, because they affect users on the job.

When asked to describe important trends, John A. Hill wrapped up all three of the emergent technologies. Important trends include "probably going to voice over data on digital PBXs. Local-area networks and large-scale integration are also very important," according to the Vought Corp. data communications manager.

"The generic terminal concept" is bursting upon the communications scene quickly, he added, and his company is moving to use such devices "because we want scientists and engineers to have personal computers."

Al Naseef, scientific programming specialist with Lockheed Electronics Corp. in Plainfield, N.J., noted how information services that were too intimidating and expensive five years ago are "casual entities" today. Naseef works in a mainframe environment but, he said, "Today, I have several microcomputer systems available to me."

When asked about important trends, David McNamara, an engineer with the John J. McNamara Electronics Co. in Riverside, R.I., said, "I guess high speeds, more network control and local-area networks." He lamented the sluggish emergence of standards for local-area networks, noting, "They're not coming fast enough. As a result, organizations are holding back."

IBMer Don Phillips said "remote computing going toward personal computers interfacing out of the mainframe" is an important trend. Phillips, who has a personal computer at home, said using it can be a time-consuming task. "You have to work with it quite a bit," he noted.

Bob Rathke of Rochester, N.Y., talked about decentralizing computer systems when he commented, "I think about getting away from the IBM hierarchical style of systems that are prone to single points of failure." The senior analyst at Rochester Gas and Electric Corp. cited the movement toward protocol conversion and universal communications between disparate devices.

Rathke said the demand for personal computers in his organization is growing. "We see the personal computer perhaps replacing the traditional terminal," the senior analyst observed.

The failure of data communications companies to provide products that meet users' needs was on the mind of Dick Torborg, associate director of corporate development at Dynatech Corp. in Burlington, Mass. "They release products that don't really meet customers' needs," he declared. "Not too many companies do that right."

Bruce Torello, senior network consultant with Dunsnet in Wilton, Conn., cited voice/data integration and packet switching as "the two big things I see." He also mentioned satellite communications.

Bevy of Products Debut at Meet

(Continued from Page 10)

Codex Corp. introduced its 224 Modem, designed for full-duplex communications on two-wire circuits and said to transmit data at 2,400 bit/sec. It is a Bell Laboratories 212-compatible modem.

Single-unit price for the Codex modem is $1,195 and it is also available for a two-year lease of $54/mo. Codex is based at 20 Cabot Blvd., Mansfield, Mass. 02048.

Intertel, Inc. brought the curtain up on its NCM 14400 Modem, said to be capable of transmission speeds of 14,400 bit/sec. It operates over both domestic and international private lines.

The modem will be available in May for $7,650 from Intertel, 6 Shattuck Road, Andover, Mass. 01810.

In a move designed to upstage coaxial communications, Fibronics International, Inc. introduced its Cable Bandit coaxial cable/fiber-optic multiplexer. It is said to eliminate the need for 31 coaxial cables by multiplexing 32 outputs from IBM 3274, IBM 3272, System/34, System/38 and other controllers into one fiber-optic cable.

The Cable Bandit is available for $5,000 from Fibronics, 218 W. Main St., Hyannis, Mass. 02601.

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Managers Urged to Become Corporately Involved

By Bruce Hoard
CW Staff

MIAMI BEACH, Fla. — Managers must aggressively insert themselves into their companies' futures and "become consultants to [their] own corporate clients," according to Charles E. Yates, assistant vice-president of market planning for AT&T.

Yates delivered this advice last week to an audience here at the Interface '83 conference and exposition. During his session, titled "Strategies for Information Management," he also discussed trends and changes in the information industry that have made such personal intervention possible.

The most prominent trend is the continuity of change, Yates said. Constant flexibility is required if companies are to avoid the abyss that separates success from failure.

Mergers and acquisitions are one form of change for which DP and communications managers must be prepared. As corporations seek new identities, it is incumbent upon information managers to keep their systems up to date, he observed.

Proactive, as opposed to reactive, thinking is difficult for information managers because many have seen their careers move through relatively sedentary levels. They are required to think and plan ahead more than ever before, Yates said.

Technology and its variations are the largest components in the change equation, he said. If managers are anything less than dedicated to staying on top of new technologies, they risk failure in their efforts to assert control, he stressed.

The willingness of suppliers to pay attention to individual customers is encouraging, Yates said. Especially in the area of networking, users can use all the help they can get.

The deregulated, restructured communications environment is confusing and will remain so until some time after next Jan. 1, when AT&T is finally reorganized, he said. In the interim, users should resign themselves to a multiplicity of products and services from a variety of companies.

Yates told his audience to adopt a "co-supply philosophy," whereby different companies offer "synergistic" components for the good of users.

Don Smith, an internal consultant with Merrill Lynch, Pierce, Fenner and Smith, Inc., agreed with Yates' explanation of deregulation effects, saying the situation "will get worse before it gets better."

The proliferation of desktop and personal computers has intensified the problem of protocol incompatibility, Smith commented. According to him, many people do not appreciate what a problem compatibility is.

He also suggested starting out with a pilot project when moving into the local-area network area, saying, "local-area networks are here to stay." Such a pilot project need not be expensive if the user relies on equipment already on hand along with some leased equipment.

"You don't have to end up in the mud with arrows in your back if you do it right," Yates observed.

CW at Interface '83

Speaker Pushes Balanced DP

By Jim Bartimo
CW Staff

MIAMI — "People just want to get the job done," according to Pete Moulton. "That's why personal computers are so popular. People look at them and say, 'I can get a lot of work done with one of those.' "

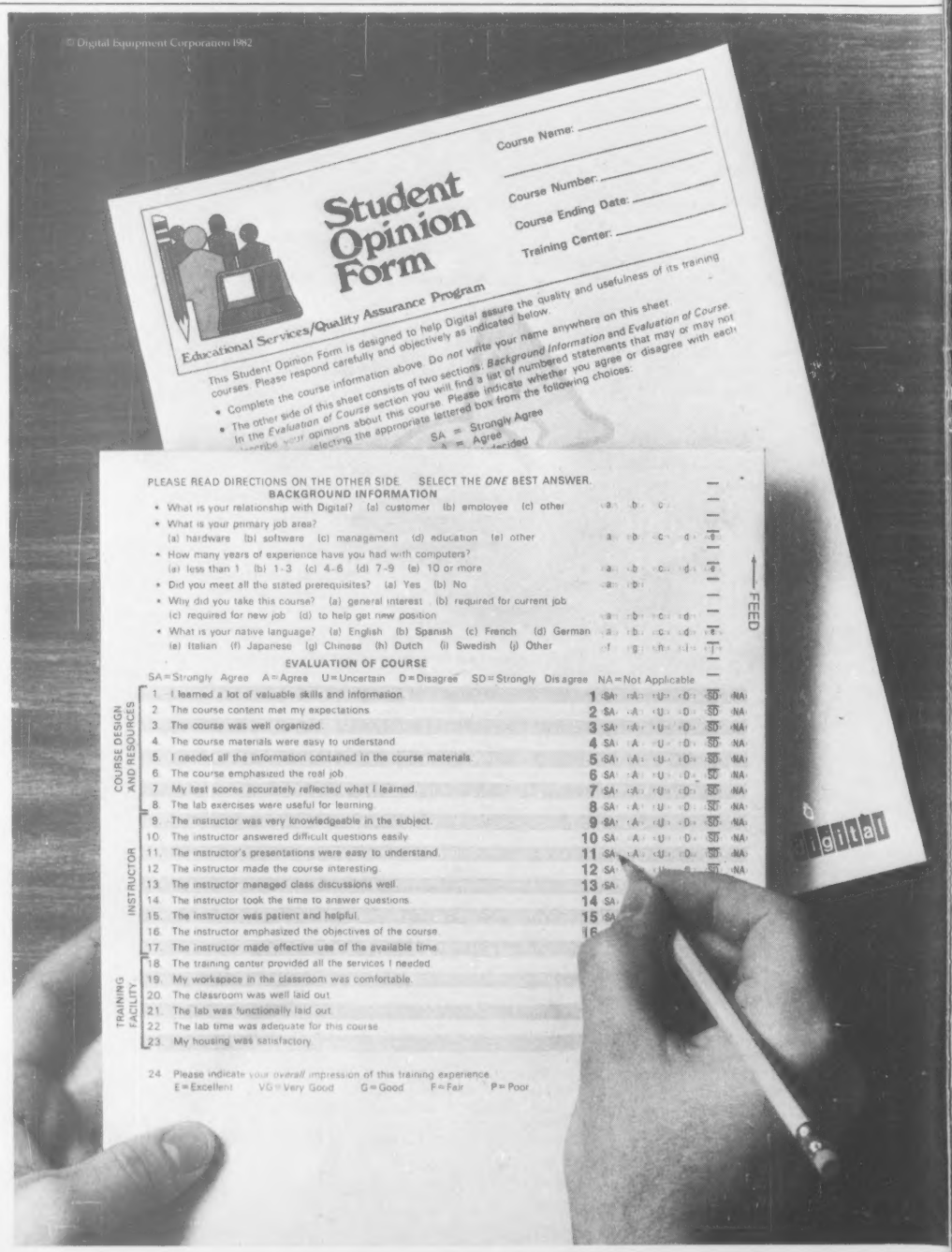
Speaking on desktop computers and intelligent terminals last week at Interface '83, the consultant from the Columbia, Md. firm of Moulton and Co. also said that the "job" can be accomplished only through "balanced computing."

"Balanced computing is when the systems structure reflects the organizational structure," Moulton explained. "We have computers at all organizational levels, but the systems should be a mirror image of the organization."

Many vendors provide methods of constructing systems architecture, Moulton said, but that is only half the problem. IBM's Systems Network Architecture "is an excellent technical description of how to design communications software and tie mainframes together, but it doesn't address managerial issues."

These managerial issues will become more important to businesses as personal computers and intelligent terminals pervade the office — when, for example, micros are tied into the corporate mainframe. There must be a cooperative effort between managers and the DP department to accomplish this, he said.

But the job will have its obstacles. Compatibility and communications problems will need to be addressed, as will "industry inertia" which, Moulton said, is evident when the mainframe vendor creates problems in interfacing micros simply because the mainframe vendor does not make any money on the micros.





CW Photo by J. Bartimo

James M. Hewitt

Saying Next Decades to Be User-Driven, Keynoters Urge User-Oriented R&D

CW at Interface '83

By Bruce Hoard
CW Staff

MIAMI BEACH, Fla. — The information age of the '80s and '90s will be end-user driven, stressed William Stritzler, vice-president of finance, planning and administration for American Bell, Inc., and James M. Hewitt, general manager of IBM's Information Network. Stritzler and Hewitt shared keynote honors at Interface '83 conference and exposition here last week.

Citing "the incredible wealth of technology" available, Stritzler predicted that users will pull technology along as demands on them to remain current and competitive intensify. Repeatedly stressing the importance of users, he called on suppliers to join them in a partnership aimed at improving productivity. He also urged more user-oriented research and development.

"Users, managers, corporations, R&D organizations and information suppliers that follow this joint information-gathering approach will stand head and shoulders above the competition in today's marketplace," he stated. Productivity is the logical result of such a partnership because products with the broadest uses are those that are merged with the needs of users, he noted.

Demands on computer and communications managers will increase sharply as one out of every three white-collar workers gets a terminal on his desk by 1985 and the personal computer market balloons to $21 billion by 1986. "Computers in general are being born faster than babies," Stritzler remarked.

IBM's Hewitt also called for end-user orientation, saying the computer industry has grown rapidly because it has nourished user needs. However, demands in that area will accelerate precipitously as the more complex applications of the '80s require more and more knowledge. "We clearly need friendlier systems," he commented.

Hewitt referred to the "increasingly intertwining relationship between computers and communications," suggesting the two disciplines are both competitive and complementary. As an example, he said that IBM and AT&T are each others' competitors and customers.

In order to make the transition to the information age a smooth one, an architecture that will allow anybody-to-anybody communications must be built, Hewitt maintained. It is not enough to design computer systems that provide only universal intra-company communications. Intercompany communications should be the goal, he declared.

Hewitt said that no matter which particular networking strategies come to the fore, an architecture that will facilitate them all must be constructed. Then users can make their own decisions.

"Solutions will have to evolve around economics, flexibility and capacity for growth," Hewitt said.

The sophisticated nets evolving now will be heavily dependent on equally sophisticated network management technology, he said, calling network management "perhaps the biggest challenge of the '80s." He singled out network software as a complex area that has a strong need for more user friendliness.



CW Photo

William Stritzler

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DP Managers Enthusiastic About Personal Computing

(Continued from Page 1)

(29.6%) have a combination of personal computer users remotely linked to the mainframe and standalone. And while most foresee a future of "personal computers networked to a common data base," only seven (4.8%) respondents now have only personal computer users who are remotely linked to a mainframe.

MIS and Micros: Good Relations?

How will the relationship between personal computer users and the management information systems (MIS) department evolve over the next 10 years?

In response to that question regarding their own firms, 71% (157) of the 220 *Computerworld* readers recently surveyed by mail expressed enthusiastic belief in the growth of end-user personal computing, while 25% (55) believe it will not happen in their firms, will happen very slowly and/or will place greater demands on the MIS function.

Twenty of the 212 who answered the question expressed positive views while adding a caveat regarding possible problems of control or management.

"I'm a little apprehensive when it comes to end users building their own small subsystems, then coming to me to integrate them with the mainframe data base," noted a DP manager in manufacturing. "There I fear data flow and data security problems will arise."

"Unless strict controls over program development are initiated, redundant efforts will prevail and costs will skyrocket," warned Jon Tanner, MIS/DP manager at Optoelectronics in Richardson, Texas.

In contrast to those who feel that personal computers will place greater demands on MIS, many managers believe the use of personal computers by end users will instead relieve the DP department of many tasks it would gladly escape, as well as foster cooperation between the two.

"With the power of the micros increasing and more advanced software, we will see much more distributed processing, relieving our central computer of much of its current work load — editing, word processing [and so on]," predicted Steven Hare, manager of computing services for Pritsker & Associates, Inc. in West Lafayette, Ind.

An anonymous respondent wrote: "There will be battles for a while, then better relationships as users become more knowledgeable and cooperate with security measures, compatibility [and so on]."

According to the DP audit manager for a Minneapolis-based wholesale/retail firm, the relationship between end users and DP will result in "total alienation unless attitudes change. Personal computers allow users to strike back at DP for what they see as uncaring and unresponsive attitudes by DP for the users."

Of the 95 users with only standalone personal computers, 27 (28.4% of the 95) indicated they have had "some" data flow problems and three (3.1%) said they have "serious" problems of data flow. Fourteen (14.7%) managers in that category have "some" data security problems and two (2.1%) have "serious" security problems.

Of the seven managers with only remote personal computers linked to mainframes, only one indicated he has "some" data flow problems, and only one has "some" data security problems.

Twenty of the 43 (46.5% of the 43) managers with a combination of stand-alone and linked personal computers have experienced "some" data flow problems, while one (2.3%) has had "serious" problems in that area, according to the survey.

Of the same 43 managers, 12 (27.9% of 43) have had "some" data security problems and one (2.3%) has had "serious" data security problems.

But even problems do not seem to cloud these managers' visions of a bright future. Forty-two of the 59 (71%) managers currently having problems said they encourage more end users to have personal computers. Even two of the seven with serious problems encourage the use of personal computers.

Thirty-nine of the 75 (52%) managers surveyed who are not using personal computers of any kind also indicated they encourage their use. And, not surprisingly, 56 of the 88 (63.6%) with no problems at all also encourage personal computers in the work place.

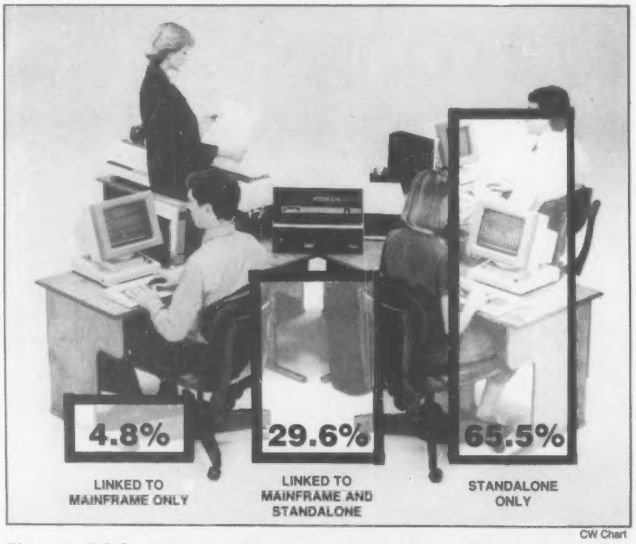
Eight of the 59 (13.5%) managers with personal computer-related problems discourage their use and eight are indifferent. Thirteen of the 75 (17.3%) nonusers discourage their use, while 15 (20%) are indifferent. Lastly, five of the 88 (5.6%) managers with essentially problem-free personal computers discourage the use of personal computers and 22 (25%) are indifferent.

These figures reflect the fact that some managers indicated they encourage some users and discourage others from using personal computers.



CW Chart

Figure 1. Of 220 respondents to a CW mail survey, 75 indicated they use no personal computers in their firms, while 145 indicated they do.



CW Chart

Figure 2. Of the 145 respondents using personal computers, seven utilize only personal computers remotely linked to a mainframe; 43 have a combination of personal computer users remotely linked to a mainframe and others stand-alone; and 95 use only stand-alone personal computers.

This User Anticipating Some Problems

One company that responded to the *Computerworld* survey, currently setting up an in-house personal computer store, will be facing other problems in June, when it links about 25 IBM Personal Computers to its mainframe to act as management workstations.

How does Mutual Benefit Life Insurance Co. in Newark, N.J., intend to avoid problems of data flow and data security? "In terms of data flow, we have developed Personal Business Computing Guidelines," explained Charles McCaig, vice-president of the Information Services Division.

The guidelines basically say that personal computers "are best used as tools for one's personal needs and for departmental systems needs," McCaig noted. Interdepartmental applications that "start to create dependencies from other departments on [a user] are inappropriate for both parties," he said. In addition, applications that have a companywide impact are disallowed by the guidelines.

The Information Services Division does not intend to "go out and check to see what [users] are doing, but we do have a certain level of control over the amount of and what kinds of data we allow them to access," McCaig said. "And that is really the control point."

In this changing environment, what will the ultimate relationship be between the end user and the management information systems (MIS) department? "The MIS department will be the consultant and adviser to the end user and will encourage the end user to make aggressive use of personal computers within a set of guidelines," McCaig said.

"All we really want to be careful of is that the company data bases and the major company processes are in fact properly controlled," he added. "I think at this point in time, and for a while anyway, that control requires a central MIS.

"We've got to take care of the backbone network computer systems and we really have to be relied on to make the right hardware selections and see that the whole thing fits together," he concluded.

Should They Restrict Their Growth?

Info Center Managers Grappling With Micros

By Lois Paul
CW Staff

Managers of information centers are grappling with the same problem facing management information systems (MIS) managers everywhere: What to do about micros?

An information center — the term was coined by IBM several years ago — is a facility within an MIS department dedicated to helping end users handle some of their own programming needs. Rather than adding his request, for example, for a one-time report to the DP department's already huge application backlog, an end user can go to the information center for training on software packages and handle a "quick and dirty" job like this himself.

Each of the three managers of fledgling information centers profiled by *Computerworld* over a year ago [CW, Dec. 28, 1981-Jan. 4, 1982] has wrestled since with the question of whether to restrict the growth of microcomputers within his corporation or provide support after the end users have purchased the micros on their own.

The three managers of fledgling information centers profiled by Computerworld *over a year ago have wrestled since with the question of whether to restrict the growth of microcomputers within their corporations or provide support after the end users have purchased the micros on their own.*

Osborne Micros

Karen White, for example, who is supervisor of the California State Automobile Association's (Csaa) information center, installed about 124 Osborne Computer Corp. microcomputers in Csaa's district offices four months ago to support a software package Csaa's DP staff wrote for handling insurance rate quotes. Forty additional micros have since been installed in Csaa's main office departments for more general use.

"We have been very fortunate because we have had full cooperation from our user community and, so far, we do have only one brand of microcomputer in here," White noted.

However, the Osborne is probably an interim solution. "We don't think we necessarily want to tie ourselves up with more expensive equipment at this point when there will be much more powerful equipment available for a lot less money two or three years from now," she explained.

White pointed to the micros as a major reason why her group has grown from a two-member operation to a staff of 11 that includes a core of four analysts and seven word processing and clerical support people. The information center itself supports nearly 1,000 people.

Carl Smith, information center manager for Gould Pumps, Inc. in Utica, N.Y., has taken a more formal route, developing a corporate policy designed to control the growth of microcomputers. "Last year we took an active role. When the IBM Personal Computer was announced, rather than sit back and wait and see, we bought one for the center," he said.

But after evaluating the Personal Computer and writing some software on it for user departments, Smith's group decided to hold off on the wholesale purchase of microcomputers. It decided, instead, to continue using end-user-oriented tools on the mainframe because more computing power and storage is available with the mainframe-oriented tools.

In addition, he said, the users have access to existing data bases, and the mainframe-oriented, fourth-generation packages seem more user-friendly than the software available on the Personal Computer.

For those reasons, Smith is hoping to prevent purchases of microcomputers among end users for at least a year, while his information center continues to evaluate machines.

Both White and Smith believe that users should not be encouraged to work in procedural languages such as Basic on their personal computers. Smith feels that much of the available microcomputer software does not meet user needs when purchased and, therefore, requires time-consuming modifications.

However, White's group had a good experience with several packages provided with the Osborne, including Micropro International Corp.'s Wordstar and Sorcim, Inc.'s Supercalc. But, she said, Ashton Tate's Dbase II has proven somewhat of a disappointment in terms of its user friendliness. "We are now in the process of looking for another layer of software as a front end for that."

The third information manager profiled last year by CW, John Kincaid, is not trying to stem the growth of microcomputers at Union Carbide Corp. Kincaid is staff analyst for the CMS Support Group in South Charleston, W. Va., which comprises the firm's information center.

(Continued on Page 16)

More Pressure For CPU Power Affects Centers

More than a year after their startup, the three information centers profiled by *Computerworld* in 1981 have been affected one way or another by resource utilization pressures.

At Union Carbide Corp., the need for more horsepower to support the information center's approximately 2,100 users led to an upgrade from an IBM 3033 to a 3081. The company, which is running the VM/CMS High Performance Option operating system, will go to the K upgrade of the 3081 next month.

"What we have found is that each increment of processing power that we have added has been consumed almost immediately," said John Kincaid, staff analyst of the CMS support group.

Limited computer resources have restricted the growth of Gould Pumps, Inc.'s information center, which anticipates the installation of an IBM 3083 next month. The existing IBM 4341 Model Group 2 is out of resources, according to information center manager Carl Smith.

Although the California State Automobile Association (Csaa) has not had to upgrade its computer system because of information center demands, concerns about the CPU capacity required for IBM's APL-based ADRS II have led to the placement of restrictions on growth in the use of that product. "This is one of the things that drove us in the direction of microcomputers," information center supervisor Karen White observed.

Although no "run-ins" with production DP staffers were reported by the three information center managers, the issue of CPU resource is a sensitive one. Smith feels that the question of which type of DP job should take precedence must be left to the end users. White, however, said that assuring DP that she is analyzing the risks as well as the benefits of installing a new package seems to appease most of its concerns.

Variety of End-User Products Offered by Firms With Info Centers

Each of the three organizations that have implemented the information center concept is offering a different variety of end-user-oriented products.

At California State Automobile Association (Csaa), they include IBM's Document Composition Facility, APL-based ADRS II and Project Evaluation and Control System on the mainframe and Sorcim, Inc.'s Supercalc, Micropro International Corp.'s Wordstar and Digital Research, Inc.'s CP/M operating system and CP/M utilities on Osborne Computer Corp. microcomputers.

"We are still missing a fundamental tool," said Karen White, supervisor of the Csaa information center, referring to software that will allow information center users to access mainframe data. She indicated that this type of software should be brought on board by next year.

Gould Pumps, Inc. of Utica, N.Y., is offering its users Pansophic Systems, Inc.'s Easytrieve, On-Line Systems, Inc.'s Foresight financial planning system and IBM's Graphic Data Display Manager (GDDM). Information center manager Carl Smith plans to install Information Builders, Inc.'s Focus toward the end of this year.

In addition, White has installed a Fortran compiler to enable the firm's engineers to switch from using a time-sharing system to working on the host. In line with the installation of GDDM, Smith's group has set up a walk-in graphics center for users which includes color terminals and printers.

His group also has taken on responsibility for promoting office automation systems within the firm. Currently, it is installing a distributed word processing system in the corporate offices.

At Union Carbide Corp., information center users can choose from Infodata, Inc.'s Inquire, Issco Graphics' Tell-A-Graf, SAS Institute, Inc.'s SAS, Execucom Systems Corp.'s Interactive Financial Planning System and the traditional programming languages. Each is handled by a product coordinator who fields enhancement requests and handles training.

There also are internal packages for areas such as physical chemistry, engineering, mathematical analysis and management science.

The information center no longer is using IBM's Query by Example because it was too expensive in terms of resources, explained John Kincaid, staff analyst for the CMS Group.

Backlog Decline Not Credited To Info Center

Although the information center concept was developed in hopes of reducing the management information systems application backlog, none of the three information center managers interviewed recently could directly attribute decreases in application backlog to the development of his information center. But each was able to point to indicators that spell success for the concept.

The California State Automobile Association's information center "has had a good track record," said Karen White, information center supervisor. "People are aware of successes that our group has helped with in other departments, so they do come to us."

At Gould Pumps, Inc. of Utica, N.Y., the number of smaller requests submitted to the DP department — projects requiring eight hours or less — has fallen off completely. "That shows you that much of the maintenance and quick one-type deal ad hoc requests are now being accomplished with information center tools," said Carl Smith, information center manager for Gould Pumps.

And at Union Carbide Corp., one of the company's divisions has developed its own decision support system to provide its upper management with sales and forecasting data. "In the past, that type of work would have been funneled through the central processing groups and probably increased their backlog," according to John Kincaid, staff analyst for the CMS Support Group.

Dodge Assails Current State of Software

By Bob Johnson
CW New York Bureau

NEW YORK — Although comprehensive, "feature-rich" applications software packages are available today, most pay only lip service to integration, are not really data base-oriented and are not as user-friendly as they could be.

That is how Frank H. Dodge, president of McCormack & Dodge Corp., described the state of the software industry earlier this month. Dodge's firm, the vendor of financial and accounting software packages, was acquired for $50 million last week by Dun & Bradstreet Corp. (story on Page 101).

Speaking on future software industry trends in his keynote address at the Software/Expo East conference here, Dodge said some vendors are providing applications packages that work reasonably well, but most software products are neither doing all the things for which users bought them nor functioning as vendors originally designed them. This has created a "product utilization gap" which "we as an industry must begin to put our resources into bridging.

"Today, there are more first-time users than ever before. The backlog of applications software is still growing, and with all the market hype and competition, users, despite their sophistication, are becoming more and more confused by the myriad of hardware and software product combinations on the market."

Dodge expressed confidence that the software industry has the financial and human resources available to meet the challenge this "gap" has created. One way for vendors to do it, Dodge said, is to find a new approach to systems development. Major software vendors must "divorce themselves from the short-term current focus of adding more features to meet competition and must not yield to user base enhancement pressures. We know that system changes and upgrades done in this kind of context only aggravate and reinforce the problems of utilization and product complexity."

Instead, Dodge called for long-term development and a "pure" approach to research. Software firms that expect to be successful must be willing to make substantial investments in software research at the potential cost of lower profit margins.

"The current system development environment must have this sort of pure research approach because of the accelerated breakthroughs that are occurring in hardware costs and system software technology," he explained. "The old constraints of program size, storage size, on-line and data base limited capabilities are gone."

Trainer Offers Free WP Courses To Unemployed

BURLINGTON, Mass. — In an attempt to "try to turn around the unemployment situation" with philanthrophy, Victor Yuan, president of United Word Processing, Inc., is training word processor operators at no charge.

Possibly the first program of its kind, the 35-hour course has been offered to Comprehensive Employment and Training Act (Ceta)-eligible people since January. "This is the first offer of direct training from a private fund that I'm aware of," said Martin Robb of the Massachusetts Department of Manpower Development, who helped Yuan develop the program.

To gain acceptance to the free course — priced for Yuan's paying students at $300 — people must demonstrate economic hardship and an ability to type at least 40 word/min.

"We want to help people who need help the most," Yuan commented. "Ceta does the initial screening, then we do the free training."

"Of course we're taking a big loss on this. It's taking a big chunk of our time," Yuan admitted. "We're just a small school making a small ripple. But perhaps we can rock the boat and be an inspiration to bigger companies like IBM and Wang to train unemployed people for free."

Managers Deal With Micros

(Continued from Page 15)

A number of Union Carbide employees have bought micros. The information center is not trying to control their acquisitions; instead, Kincaid said, it regards them as "just another tool that can be used."

Nevertheless, one of the information center's future considerations will be those micros' effect on its operations. "We can't stop them and we don't want to stop them, but we do want to be able to provide [users with] support after they have got their personal computer and they find out it is not going to suit their needs completely. We want to make it as easy as possible for them to link into the data center," Kincaid said.

All three information center managers are seeking general-purpose packages allowing communications and transfers of files between microcomputers and mainframes.

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Minis, Printers, Terminals

N.J. Spending $22,000/Mo for Boxed DP Gear

By Susan Blakeney
CW Staff

TRENTON, N.J. — Stacks of Honeywell, Inc. minicomputers and an assortment of Honeywell printers and terminals — waiting patiently in their boxes for a year and a half — are costing the New Jersey Division of Motor Vehicles (DMV) here $22,000 in leasing fees each month.

DMV cannot set up the equipment because it has yet to secure appropriate office space for the hardware, according to DMV Public Information Officer Art Smith. While 22 of the state's 50 DMV branches are up and running with their new Honeywell equipment, space for the remaining 28 sites has yet to be rented.

Those 28 offices are still using manual systems for such tasks as license and registration renewals, while their computers sit, still boxed, in the basement of the state's Systems and Communications Building in West Trenton.

The present Republican administration under Gov. Thomas Kean inherited the situation from former Gov. Brendan Byrne's administration, which allegedly leased the computer equipment before establishing where it would go. Most of DMV's offices were unsuitable for the Model 43 Level 6 minicomputers because of space and power constraints, so the offices had to move or be extensively renovated, Smith said.

Furthermore, the new DMV offices need to be in buildings carrying at least five-year leases because of the renovations required. "It wouldn't make sense to renovate a building for anything less than a five-year lease," Smith pointed out.

Arrange Leasing Terms

Before DMV can rent new office space, however, the state's Bureau of Real Estate must be consulted to help arrange leasing terms with the property owner or landlord.

The next step is to bring the agreement before the state budget director for his approval.

From there, the proposed lease goes to the state treasurer's office, then to the president of the state Senate. The lease is then subject to the approval of New Jersey's Speaker of the General Assembly, Alan Karcher (D-Middlesex).

If it wins Karcher's approval, the state goes back to the owner to negotiate renovations such as special electrical, parking and handicap ramp requirements.

"Even once the lease is approved, it's another three or four months of renovations. Some of these leases will probably be no good when they finally go through . . . the landlords are sick of waiting around for us," Smith remarked. For example, one lease that awaits Karcher's approval dates back to November 1981, according to Smith.

Karcher countered by accusing DMV of being politically motivated and wanting to rent office space from their political friends. In a recent telephone interview, he argued that DMV's existing office space is adequate and "they [DMV] don't have to move all those offices. As far as I know, it's just terminals that need to be installed — how much space do they take up?"

Karcher also maintained that the proposed leases are too expensive. "They could find space that's 50% to 100% cheaper than what they took. And many of these places are in the most remote locations. It doesn't make sense!"

Asked about the ultimate costliness of all this finger-pointing — some $400,00 over the past 18 months — Karcher maintained his position: "I would hope that they [DMV] would find better leases, and I know they can. I'm not going to sign any leases for these prices — $18 and $19 a square foot — when I know there's $6, $7 and $8 office space available."

As for DMV's contention that it must secure a minimum five-year lease, Karcher said, "There's no need for a five-year mimimum. They just want to carry these things over to the next administration."

Data Courier to Offer Publications Directory

LOUISVILLE, Ky. — Data Courier, Inc. has announced plans to publish a directory of serial publications serving the computer and software industries.

Called "Select: A Guide to Computer and Software Publications," the directory will be published for information specialists and others that are interested in industry publications.

The directory will describe more than 500 publications, listing general content, cost, publisher and address, average number of pages, audience and advertisers, according to Data Courier.

The directory will be available in September and costs $50.

After September, the directory will cost $65.

Data Courier is located at 260 S. Fifth St., Louisville, Ky. 40202.

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Group Keeps Users From Feeling Left in Lurch

By Susan Blakeney
CW Staff

NATICK, Mass. — Cheryl Foster maintains that when Informatics General Corp. comes out with a new software offering, it urges users to "start with the book, then use your imagination" to make the most of the product. That, she thinks, makes users feel that they have been left in the lurch.

But meetings of the Mark IV Users of New England (Mune) users group serve to tap and organize the collective "imagination" of the users, which enables them to use the Mark IV software language better.

"Other people's techniques can be really helpful," said the programmer from Automation Industries, Inc. in Bath, Maine. "I come to all the users group meetings."

Foster has been a Mark IV user and a users group member for about two years. Claiming that the users group has been largely responsible for most of the improvements Informatics has made to Mark IV, she would like to see the users group incorporate other Informatics software products that she uses into its scope, Foster said.

"It should not be just tailored to Mark IV, although I realize you have to be careful . . . you can't become too diversified. But I'd like to see Answer/DB [Informatics' online inquiry package] included at the meetings. Unfortunately, there's only a few users around here right now."

Mune, one of approximately 10 regional Mark IV users groups, convenes three times a year. It operates independently of the vendor, although there is usually an Informatics representative on hand at each meeting for an "Informatics Update" session.

In addition to the regional users groups, Mark IV users are also invited to attend semiannual IV (pronounced Ivy) League, Inc. national Mark IV users group meetings. The next one is slated for New Orleans, May 1-4.

There are no membership dues for any Mark IV users group member, just registration fees for the various meetings. To keep costs down, all speakers come from within the users group and address the group for free, said Ron Connors, Mune's current secretary/treasurer. Connors, a Mark IV user at State Mutual Life Assurance in Worcester, Mass., noted that the present Mune administration is



Cheryl Foster



Ron Connors



CW Photos by S. Blakeney
Beverly Bishop

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by New Offerings

working on setting up an "exchange program" with speakers from other regional Mark IV users groups, such as the Eastern Regional Mark IV Users Forum (Earmuf).

Like Foster, Beverly Bishop, a four-year veteran of Mune, finds the users group meetings very helpful and "brings something back from each one." In addition to the workshops offered at the meetings, Bishop, a research consultant with Prudential Insurance Co. of America in Boston, finds the contacts she has made through Mune very useful.

"We can't go to our systems people for help because we have a better understanding of Mark IV than they do. We both operate in a vacuum, so we need to come to these meetings," she said.

Burgeoning Micro Sales Predicted

NATICK, Mass. — Luther Weeks believes "price drops and total sales of microcomputers will exceed all current estimates."

Weeks, assistant director of data processing, with emphasis on microcomputer support, at Travelers Insurance Co. of Hartford, Conn., made this statement during a speech entitled "Microcomputers and Their Applications" at a Mark IV Users of New England meeting held here last week.

Weeks also anticipates faster machines; more standardization of workstations and operating system software; and greater availability of integrated multifunction software packages like Visicorp's Visicalc.

"Spreadsheets have probably done more to sell micros than any other single capability," Weeks said.

Weeks offered his audience the following advice on selecting and acquiring microcomputers:

- Decide what you want the personal computer to do before you get one.
- Find software to match your major application.
- Try to find a popular, expandable machine.
- Make sure all the equipment works together.
- Test, test, and test it again.
- Understand that whatever you buy, it will become better and cheaper next year.



CW Photo by S. Blakeney

Luther Weeks

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Martin on Info Center: Take a Broad View

By Lois Paul
CW Staff

CAMBRIDGE, Mass. — "Don't take too narrow a view of the information center," James Martin warned attendees at his recent Spring 1983 Executive Seminar.

Describing the information center as "one of the most important trends" in data processing, Martin said most of the firms that have established them to aid end-user computing have generally found them appropriate for information systems rather than for production systems. "I think it [the information center] should apply to the whole of computing," he said.

Martin stressed the importance of users and information center analysts working together to build applications, sometimes with the help of programmers assigned to the facility.

"The view of the information center ought to be as broad as this. All of those things are possible," Martin said.

According to Martin, the organizations that take this broader view of the information center can realize decreases in the applications backlog.

Invisible Backlog

He noted that a problem with measuring decreases in this backlog is that "once you let end users rip" with applications building, they will reveal the "invisible backlog. But the effectiveness of computing goes up substantially."

The job of the information center's end-user product specialist is to tune the applications the end users have built, using fourth-generation languages for better machine efficiency, he continued. For example, this more experienced programmer would avoid multiple searches in a program where they are not strictly needed, Martin said.

"There are many spectacular ones, some that are failures and some that are not worth talking about," Martin said of the existing information centers. The ones that are "not worth talking about" are trying to solve trivial problems rather than addressing the real problems within the organization's DP installation. "It is very important to put together that set of people and management that will expand and grow and be successful," Martin said.

Martin pointed to resistance and fear of replacement by the DP staff as being among the reasons real end-user computing is not happening in many information centers. Centers in which end users are allowed to build their own applications "not only work, they are sensational."



UCC Meet Set for June

DALLAS — University Computing Co. (UCC) will sponsor its seventh annual Systems Software Conference in San Antonio, Texas, June 26-29.

More than 600 clients of the firm are expected to attend the four-day meeting, which will be held at San Antonio's convention center.

Further information can be obtained from UCC at UCC Tower, Exchange Park, Dallas, Texas 75235.

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Martin Sees DP Languages in 'Chaos' Period

By Lois Paul
CW Staff

CAMBRIDGE, Mass. — After nearly 20 years in which computer languages changed very little, data processing has been plunged into a period of "chaos" with languages that do not even resemble one another.

The next five years will be characterized by all manner of new products and a lack of standards, James Martin said at his Spring 1983 Executive Conference, held here earlier this month.

A problem he perceives with the influx of new fourth-generation languages is that a person building applications in National CSS, Inc.'s Nomad, for example, may still be using Cobol constructs and thinking. Referring to this as "Nobol," Martin said it is not very effective.

A DP installation's applications development group should include a number of new graduates who can be trained on the new languages, plus older experienced programmers whose job it will be to check for mistakes.

"You must match the application to the language," Martin stressed, noting that there are catastrophe stories about firms that did not do this. "You must have somebody with enough technical knowledge to know not to approach that particular application with [Mathematica Product Group, Inc.'s] Ramis, for example."

He suggested that one person on the staff be assigned as the fourth-generation language "expert." This person will be expected to learn about various languages and then build applications with them so he can compare their capabilities. He will also look at crucial areas such as machine performance.

'Flying Blind'

"Until you get that expertise, you are flying blind trying to do big projects with fourth-generation languages," Martin said.

The introduction of fourth-generation languages to a firm must be part of a specific plan in which the manager says, "You will use [Information Builders, Inc.'s] Focus and you will use it for this particular process," and so forth, he said.

"That is the sort of management that is making these things happen," Martin said.

"Programming in fourth-generation languages has brought an excitement back to DP that had been driven out by the bureaucracy of the 1970s," Martin said, referring to this as a "challenge to be creative.

"When people are excited, they work very hard." One of the challenges, therefore, is "to remove the levels of control and bureaucracy that were acceptable in the Cobol environment but now need to be thrown overboard."

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HISSG Meet Set for May

DALLAS — "Financial Information Systems: Current Status and Future Requirements" will be the theme of the Hospital Information Systems Sharing Group's (HISSG) third annual seminar here May 18-20.

Walter J. Unger, associate director of the Washington, D.C., office of the Healthcare Financial-Management Association, will be the keynote speaker. Unger will speak on "The New Era of Case Mix Reimbursement: Its Effect on Healthcare Financial Information Systems."

Other speakers include Dale L. Thomas, president of American Health Management and Consulting Corp., "Alternative Delivery Systems"; John Eresian, vice-president of finance at Northwestern Memorial Hospital, "Financial Management and Modeling"; and Cynthia Barnard, director of DP product and research at Northwestern Memorial Hospital, "The Tax Equity Financial Responsibility Act, Diagnostic Related Groups and Beyond."

The registration fee for the seminar is $100 for HISSG members and $190 for others. HISSG is located at 11800 Sunrise Valley Drive, Reston, Va. 22091.

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BOSTON — A conference on "Personal Computers and Distributed Decision Support: A Managerial Perspective" will be held May 12-13 at the Back Bay Hilton here.

Sponsored in cooperation with the local chapters of several professional societies, including the North American Society for Corporate Planning and the Planning Executives Institute, the conference will cover the influence of new developments in the areas of microprocessor technology, telecommunications and software design on the evaluation and selection of decision support products.

The conference is intended to focus on key issues involved in the implementation of distributed decision support systems (DSS) with personal computers, including user needs assessment, networking, hardware capabilities and limitations, software capabilities, current directions in DSS hardware and software development and the legal issues associated with networking and distributed applications.

Keynote speakers will be Peter G.W. Keen of Micro Mainframe, Inc.; C. Lawrence Meador of MIT and Research & Planning, Inc.; and Jeffrey A. Meldman and Michael S. Scott Morton, both of MIT. In addition, the presidents of 10 software firms will describe their products.

Registration for the conference is $495. Further information can be obtained by contacting DSS Conference, 215 First St., Cambridge, Mass. 02142.

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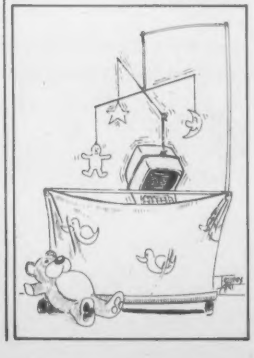
ABA Session Set for Miami May 22-25

MIAMI — The 1983 National Operations and Automation Conference, sponsored by the American Bankers Association (ABA), is scheduled to take place here May 22-25.

Focusing on effective use and management of technology, the conference will examine home banking, automated-teller machines, telecommunications, check safekeeping, check processing, microcomputers, electronic funds tranfer and smart cards, according to show sponsors.

An exhibit floor with over 400 booths will showcase a wide range of products and services, including automated information retrieval systems, check-sorting and processing equipment, microcomputers and bank application software.

Registration for the event is $475 for ABA members and $625 for others. Further details are available from ABA at 1120 Connecticut Ave. N.W., Washington, D.C. 20036.



'Electronic Ball and Chain' Sparks Controversy

By Katherine Hafner
CW Staff

ALBUQUERQUE, N.M. — Some are calling it an innovative approach to an age-old problem. Others are calling it one step closer to George Orwell's frightening scenario for the future.

As part of an attempt to reduce crowding in county jails, an "electronic ball and chain" will be worn by misdemeanor offenders who have volunteered to participate in a 90-day pilot program here. They will serve their sentences at home while wearing electronic bracelets that monitor their every movement.

Instead of reporting to jail after work every day, work-release prisoners and probationers will wear a device 24 hours a day that emits a digital code that is transmitted to a device connected to the wearer's telephone.

The bracelets, which were expected to be ready for use last week, are monitored by a Zilog, Inc. Z80 microprocessor with an autodial modem attached to the wearer's telephone, which ties into Bernalillo County's Honeywell, Inc. DPS 5/20 mainframe. If the wearer wanders more than 200 to 300 feet from the telephone, the telephone automatically signals the computer via a Honeywell Datanet 6670 front-end processor.

The computer is alerted to the exact time the wearer leaves for work and when he or she returns. If the bracelet is tampered with in the slightest way, a signal is sent to the computer.

"The advantage is that without having to send a probation officer to someone's work place or home, we can impose a curfew and make sure it's followed," commented District Court Judge Jack Love, who will impose the bracelet sentences and plans to wear the bracelet himself for a few days to test its reliability.

People will wear the bracelets in three shifts of 10 at a time and pay $70/mo for six months, which Love said is equivalent to the fine that most would pay.

But Norma Rollins, director of the American Civil Liberties Union's (ACLU) privacy project, sees the experiment in a different light.

"Anything that requires someone to be under surveillance 24 hours a day raises terrible privacy questions, not only for the individual but for the rest of society," Rollins said. "I won't deny that it's efficient, but it's like putting a leash on. We put leashes on dogs, not people."

Though a convicted criminal's constitutional right to privacy is limited, critics feel that the concept of 24-hour electronic surveillance has "frightening" implications.

The bracelet project may be the first of its kind to be instituted within the criminal justice system. Its critics are not only concerned with the question of privacy, but they fear that such electronic monitoring systems may eventually be used beyond their originally intended limits.

Steve Winter, an attorney for the National Association for the Advancement of Colored People's Legal Defense Fund said, "When you introduce alternatives, they end up being used not only for people who were sent to prison, but others who would not otherwise go to prison."

"If you walk into court for a traffic ticket, you might walk out wearing a bracelet," said Steve Ney of the ACLU's prison project.

Michael T. Goss, president of National Incarceration Monitor and Control Services, Inc., the Albuquerque-based company developing the device, defended the project.

"It does not report what a person is doing, only whether they are in a specific location or not," he said. "If anyone feels it's too harsh, they can violate their probation and go to jail instead," he said.

"If someone is giving them a choice, it's a coercive kind of choice because their alternative is to go to jail," said the ACLU's Rollins. "Work release has always been given to people who can be trusted to leave jail during the day. I don't think someone who has been released needs this kind of second-to-second surveillance."

Whether technology is being exploited beyond acceptable parameters or if the bracelets prove the answer to the nation's overcrowded jails is yet to be determined.



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Another Great Impostor?

Career of DP 'Prof' Abends From False IDs

By Paul Gillin
CW Staff

LANCASTER, Pa. — In a multiple-identity case that grows more bizarre by the day, police here last week arrested a man who allegedly taught a full-time course load at two state colleges nearly 60 miles apart while operating under a different identity at each institution.

The man, whose identity has not been determined, allegedly taught two undergraduate and two graduate computer science courses at Shippensburg State College, located 45 miles southwest of Harrisburg while simultaneously teaching four courses in business and finance at Millersville State College in a suburb of Lancaster.

The man was arrested last Monday as he entered a classroom building on the Millersville campus. A subsequent search of his Lancaster apartment turned up 16 boxes of material related to at least 13 separate identitities, according to Robert Gentzel, a spokesman for Attorney General LeRoy Zimmerman.

Gentzel said some of the material "related to other universities in the Northeast."

Also found in the apartment was a home computer with a modem and numbers that are believed to be access codes to the computers on the Shippensburg and Millersville campuses.

As far as the man's identity is concerned, "We haven't the damnedest idea," Gentzel said. "This case gets more confusing by the day."

Officials said the man, who was described as being in his 50s, taught at Millersville under the name of Dr. Peter H. Pearse while maintaining his post at Shippensburg under the name of Dr. John Byron Hext. The man taught three morning classes and one evening class at Millersburg, maintained regular office hours and was active in interdepartmental affairs.

Never Missed Class

"As far as I know, he never missed a class," said Dr. Keith Lovin, provost of Millersville State College.

Lovin said performance evaluations performed early this year showed the man's teaching performance had been generally satisfactory. "Some problems surfaced, but they were not centered around his mastery of the material," Lovin said.

A spokesman for Shippensburg State College would not comment on the man's competence as a teacher, but said he had taught two sections of an undergraduate computer course and two graduate courses in hardware/software systems.

"An independent commission has been formed to spend 30 days screening course materials and notes and interviewing students to prescribe action," said spokesman Ray Burd. "Our first concern is the students."

The bizarre dual identity came to light early this year, when officials at both colleges began to doubt the background of their new faculty member. Lovin said that "Dr. Pearse" had presented himself for a position at Millersville college claiming that he held a Ph.D. from the University of Edinburgh in Scotland.

"He provided letters of recommendation from a Monroe & Co. with a Washington, D.C., address and from a Regent Co. in Baltimore," Lovin said. "At the time, we took the letters to be legitimate." Lovin said the college's dean subsequently contacted one of the references and got a strong recommendation for Dr. Pearse.

Lovin said the man also provided adequate proof that Dr. Pearse had received a doctorate from the University of Edinburgh. "It was only [after the arrest] that I learned that there is indeed a real Dr. Pearse who is employed at the University of British Columbia."

He added that the same scenario occurred at Shippensburg, where it was found that the real John Hext was teaching in Australia.

Burd said the man was suspended without pay from his teaching post at Shippensburg Feb. 17 after an investigation turned up discrepancies in his credentials. The man was dismissed from the faculty March 10.

Gentzel said the fraud was exposed when a Shippensburg campus police officer, acting on a hunch, showed a photo of the suspect to members of the Millersville campus security force. "When the security people started showing the photo around, people recognized him," Gentzel said.

The man is charged with theft by deception, tampering with public records, forgery and false swearing. The first three charges are felonies and carry a maximum penalty of up to seven years in prison and up to $15,000 in fines. The fourth charge provides a maximum penalty of up to two years in jail.

College Issues CAD/CAM Guide

ARLINGTON, Texas — *CAD/CAM Presentation Resource Guide* is the name of a 400-page text from the University of Texas intended to help people brief top management on computer-aided design and manufacturing (CAD/CAM) equipment.

The guide includes reproductions of 8½-in. by 11-in. foils covering CAD/CAM graphics, manufacturing management systems, robotics and automated storage and retrieval systems.

The reference work costs $125, and is available from the Office of Continuing Education, University of Texas at Arlington, Arlington, Texas 76019.

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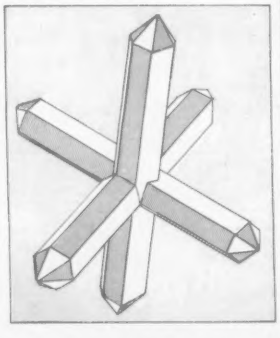


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Exec Airs Aetna's Plan for More Tech Activity

By Marguerite Zientara
CW Staff

NEW ORLEANS — "We are going beyond the support of products to make technology a major part of our products," stated Irwin Sitkin of Aetna Life & Casualty Insurance Co.

The vice-president of corporate administration made his comments in a presentation for the Life Office Management Association (Loma) conference here recently on the topic of "The Role of Information Processing: The Corporate Management Perspective."

Aetna is moving rapidly into a new phase of technological activity after a period of relative inactivity. The four areas of new technology at Aetna are office automation, videoconferencing, distributed data processing (DDP) and satellite-based communications.

Key Objectives

Aetna's key objectives in its thrust are to improve services; to speed up processing; to give agents direct access to information systems; to improve the decision-making process; and to improve the productivity of clerical, technical and managerial workers "while enforcing privacy and security controls," he noted.

The keys to success in such an undertaking "lie not in the tools themselves, but in how people interact with those tools," Sitkin said. "Objectives and plans must be articulated early on and management must deal with the question of *how* to reach business objectives through the technology."

With more than 750,000 transactions a day, "we couldn't do it without the technology," he noted. "Until recently, however, our DP systems were remote, not timely, not flexible or user friendly and could not effectively be used as input to the decision-making process."

The technology must support the payment of $25 million in claims daily to hospitals, doctors and insureds. Today there is a network of 4,300 terminals linked to a data base in the home office in Hartford, Conn. Claim payments made by the company number 45 million a year, or 175,000 a day, Sitkin noted. Each claim goes through five or six CRT terminals to be processed, he explained.

Calculated Process

Aetna's office automation efforts are coordinated with the overall corporate information strategy in a "calculated process of using the available technology throughout the organization to make the next wave of managerial and administrative users comfortable with the technology," Sitkin said.

Videoconferencing has become a "part of our daily activities," he added. With two video conference rooms in Hartford, Conn., and two in nearby Windsor, Conn., they are in use 80% of office hours. In 1982, there were more than 2,000 video meetings. This year will see one more room in Hartford and one in Chicago.

Aetna's DDP efforts are embodied in its Gemini communications network, linking agents to their branch offices in San Francisco and Washington, D.C., which in turn are connected to the home office.

Increased Sales

DDP allows agents to spend more time analyzing and processing cases, projecting and doing such things as financial analysis, resulting in increased sales volume and revenues, Sitkin noted.

A personal-computer-based timesharing network comprises 2,410 terminals and 4,996 user identifications with the result that one out of three employees has access to the Hartford data base.

Satellite communications "will impact office automation, distributed data processing and videoconferencing," Sitkin noted. The medium "makes it easier and cheaper to reach out using electronic mail or video technology," Sitkin said. Aetna is a partner, along with IBM and Communications Satellite Corp. (Comsat) in the Satellite Business Systems enterprise.

Constraints to the success of Aetna's technological steps forward include the shortage of experienced information processing personnel, the speed of technological change, the need to maintain the "tremendous amount of existing code," hardware and software compatibilities, shorter product life cycles and continuing demands for faster service, Sitkin noted.



CW Photo by M. Zientara

'Objectives and plans must be articulated early on and management must deal with the question of how to reach business objectives through the technology,' Irwin Sitkin said.

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Worker Satisfaction Seen Key to Productivity

By Marguerite Zientara
CW Staff

NEW ORLEANS — To increase productivity, a DP manager must define meaningful work, match his employees' growth needs with job tasks and increase feedback to workers.

That was the advice of Robert Zawacki, professor of management and organization at the University of Colorado, who spoke at the Life Office Management Association (Loma) conference held here recently.

"Human change is slow and evolutionary, not revolutionary," Zawacki said. "While you may want quick fixes, it takes 18 to 36 months to implement human change."

Based on extensive research done in conjunction with Prof. Dan Cougar, also of the University of Colorado, which identified and studied 24 variables within 16 DP-related jobs, Zawacki urged managers to define "motivation."

Motivation begins with a "felt need or deficiency," Zawacki said, followed by a search for alternative ways to meet that deficiency, selection of a plan of action and subsequent evaluation of the action based on one's original expectations.

Managers must remember that they cannot base their actions simply on what they perceive as meaningful work or what they perceive as rewards, Zawacki pointed out. There is often a "conflict of values" between management and employees.

"While managers in the '50s and '60s believed that happy workers are productive workers, now that adage has been reversed and we believe that productivity leads to satisfaction," he noted.

There are five dimensions in DP work that can be used to measure how rewarding a job is, Zawacki noted, stressing that "you don't need all five to have a rewarding job." The five are: task identity, which allows the worker to see his importance to the overall operation; task significance, which is how important the job is regarded by the worker and his peers; skill variety; autonomy; and feedback.

The first three factors allow the worker to experience the meaningfulness of the work; autonomy allows him to be responsibile for the outcome of the work; and feedback gives him knowledge of the actual results of his work activities.



CW Photo by M. Zientara

'While you may want quick fixes, it takes 18 to 36 months to implement human change,' Robert Zawacki reminded a recent Loma audience.

These reactions add up to what Zawacki called "critical psychological states" or a worker's attitude toward his job. If the five elements are present, the worker will have "high internal work motivation, high-quality work performance, high satisfaction with the work and low absenteeism and turnover," he said.

In discussing autonomy, Zawacki noted that "DP managers worry about giving too much away." He said that managers are "overcontrolling these bright young people." The solution is to set "realistic, challenging, achievable goals with deadlines, instead of just saying, 'Do your best,' " which is too vague.

DP managers do a "deplorable" job of giving feedback and "young people need an abnormal amount of feedback," Zawacki said. "They are not rugged individualists." They need to know how they are measuring up to a manager's expectations, he said.

Ultimately, to keep everyone happy, managers must try to match a worker's "motivating potential score [MPS]" with his "growth need strength [GNS]" — his need for personal acomplishment. Someone with a high scope task and a high growth need will have a high level of congruence between the MPS and GNS and, therefore, will be satisfied and productive.

However, a worker with, for example, a high scope task and low growth need "will balk and be unproductive, but will remain with the job to maintain his lifestyle," Zawacki noted. "If you give meaningful hunks of work to people with high GNS, you won't even have to measure their productivity; they'll work too hard for you, anyway."

Cause Offers Volume Of Meet Proceedings

BOULDER, Colo. — Cause, a professional association for users of information systems in higher education, is offering the proceedings of its 1982 National Conference, which was held Nov. 30 to Dec. 3.

The 528-page volume contains 42 papers related to the conference theme, "The Information Resource: A Management Challange."

Copies of the proceedings cost $40 and are available from Cause, 737 29th St., Boulder, Colo. 80303.



Sell Management on New Technologies

Enhance MIS Image to Justify Costs: Consultant

By Bob Johnson
CW New York Bureau

NEW ORLEANS — Justifying DP expenditures to company senior management is a continuing problem for the management information systems (MIS) manager.

One way to tackle the problem is to enhance the company's overall view of MIS and to use new technologies as a way to sell management on DP's business benefits.

That was the message delivered by Gary S. Venner, director of John Diebold & Associates, at the Life Office Management Association 1983 (Loma) conference held here last week.

Venner told insurance industry DPers that expenditure problems are symptomatic of underlying company problems that include lack of MIS understanding among senior managers, lack of company decision making by MIS and lack of responsiveness to changes in the marketplace.

The speaker said that it is DP's responsibility to "take a leadership role" in providing information resources to the company in order to get the exposure that is necessary for it to get funding.

Because of the industry's rapid changes, particularly in the applications area, MIS is thrust into a situation in which management and users are demanding newer and more responsive systems, Venner said. However, funds needed for these projects are slow in coming because of senior management's perception that computer costs are going down.

Although hardware costs are decreasing, increasing software and personnel costs are driving overall costs up, he noted. This places MIS in a sticky situation, which the speaker said stems from "gaps of understanding" between company management and the MIS function.



CW Photo by B. Johnson

'From once having been lauded for maintaining daily processing on a reasonable basis and at a reasonable cost, you are now chastised for not being responsive enough to marketplace demands,' Gary S. Venner told attendees at the recent Loma conference.

"From once having been lauded for maintaining daily processing on a reasonable basis and at a reasonable cost, you are now chastised for not being responsive enough to marketplace demands," he told attendees.

MIS' inability to acquire funding for data base and other software tools poses a gap between marketplace changes and MIS' responsiveness, which compounds the problem, Venner said.

In an attempt to alleviate these problems, Venner offered a concept that addresses what is happening in technology, what can be gained from it and what the implications are for the MIS management function.

Venner explained that MIS executives can make their company aware that, through the use of available technology, substantial improvement is possible in many areas. He recommended making senior management aware of several facts: the improvements in high-level and middle management areas resulting from the use of new technologies; the expectation of computer-aided design and development for products; the opportunity for technology to enhance clerical workers so they will be true assistants; and the improvements in reliability and availability of information from service areas.

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Exec Projects Growth of Easy-to-Learn Micros

By Marguerite Zientara
CW Staff

NEW ORLEANS — The future of personal computers lies in machines that are quick and easy to learn as well as "compatible with the larger issues in the corporate environment."

That is not a surprising viewpoint, coming from the executive vice-president of marketing and sales for Apple Computer, Inc., whose Lisa personal computer claims a 20-minute learning period.

Speaking on "Personal Computing — Impact on Business and Personal Future" at the Life Office Management Association conference here recently, Apple's Floyd Kvamme projected that the estimated 2.5 million personal computers now in use will grow at a monthly rate of 100,000.

Noting that currently 40% of all personal computer users are using them for business applications, whether or not the machine is in the home, Kvamme projected that five years from now most applications will still be "to support people in real-world help — not frills."

Today, "about 75%" of personal computers are being applied to three or fewer applications; about 10% are used by very small businesses to do their accounting functions; and about 20% are used for educational purposes, according to Kvamme.

When the personal computer industry started out in 1977, "virtually 100% of the buyers did their own programming, much of it in machine code," Kvamme noted. In surveys taken last July to September, however, less than 30% intended to do any programming at all.

The number of buyers who purchase a personal computer with any idea of having to learn programming is now under 10%. With an estimated 35,000 commercial programs available to them,"they don't have to," Kvamme said.

In the work place, corporations should give employees computing equipment for their use that equals 20% of their yearly salaries, Kvamme suggested. "If we can make the worker 20% more productive in a year, then the system has paid for itself."

Systems will become increasingly portable and, more and more, software will not be user-developed, Kvamme predicted. "The third-party software business will flourish," he said.

Saying he is "a little concerned" about the implications of fourth-generation languages that allow one to speak English to the machine, Kvamme pointed out that 95% of the world does not speak English. The solution? Graphics, said Kvamme.

"Training will become programming by example," he projected. "The user won't realize he's programming with graphics interfaces; these tools will be intuitive."

Kvamme likened the phenomenon to the introduction in 1949 of the hydromatic car, "which was the first time Mom felt comfortable driving," he said. Graphics interfaces will be the vehicle by which fear of computers will be overcome.

"You all work with computers, but there are lots of people out there who are scared silly about working with them," he told his audience.



CW Photo by M. Zientara

Floyd Kvamme predicted that five years from now, most personal computer applications will still be 'to support people in real-world help — not frills.'

Fifth Volume On MRP Out

PENNSAUKEN, N.J. — Auerbach Publishers, Inc. has announced the publication of the fifth volume of its Manufacturing Resource Planning (MRP) management series, "Computers in Manufacturing."

"Distribution Management" contains articles written by practitioners in the distribution profession. The volume provides the user with the understanding of how computer-based systems can effectively support distribution management. Articles focus on forecasting, order entry and processing, transportation management, finished-goods inventory management and warehouse management, according to a vendor spokesman.

Other volumes include "Manufacturing Resource Planning," "Master Production Scheduling," "Material Requirements Planning" and "Execution and Control Systems," the spokesman said.

The most recent volume costs $175. Each additional volume is $125. The complete five-volume series is $675. Additional information is available from Auerbach at 6560 N. Park Drive, Pennsauken, N.J. 08109.

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Improves Readability

Methodology Boosts Publications Group's Output

TAMPA, Fla. — Most writers would shun the idea of letting computer software tamper with their delicate prose. But a program in use at GTE Data Services (Gteds) here is helping boost output in the technical publications group while improving the readability of documentation.

The technical publications group is a 32-member staff consisting of 23 writers and a word processing staff that provide technical manuals to end users in GTE telephone companies and GTE data centers nationwide. In all, its documentation supports 32 business information systems and 80 time-shared systems.

The group published 30,000 pages of documentation last year and expects to increase that output by 10% in 1983. To achieve continued growth in output, a documentation development methodology was adopted in 1980.

Crucial Weakness

The decision to buy resulted from an analysis undertaken in 1979 which showed that standardization was a crucial weakness. "In many cases, writers were never given proper guidelines and documentation lacked sufficient details," explained Gloria James, technical publications supervisor. "In addition, much of the documentation was actually written by systems programmers and only edited by technical writers. Style and content varied widely."

The group found that few commercial documentation aids paid sufficient attention to writing or organizing written material for DP, James said. Then the search led to the Promptdoc documentation methodology from Progressive Communications, Inc. of Colorado Springs, Colo.

Promptdoc gave writers a starting point, James noted. "Promptdoc starts with the organization of the manual," she said. "It offers 25 modules, each supplying information for a major subject area such as system overview, system messages and application programs. The appropriate modules are selected, the table of contents is generated and the document is under way."

The writer, guided by the standardized paragraphs and transitional text contained in Promptdoc, fills in the blanks with specific system information, she explained. The software provides a generic outline structure combined with specific headings. Thus, the developer is asked to provide information within the format without having to create the organization.

"This methodology is flexible enough to allow writers to include specific information in their own style and in as much detail as needed," James said. "The document is completed when all the modules have been completed."

Promptdoc allows writers and developers to define the organization of the document at the outset of system development. "Resultant documentation flows more in line with the usage of the system itself," she said. "By the time the system is complete, so is the documentation."

Writers who lack a technical background can follow the format without relying heavily on systems developers. Writers are now able to generate 70% to 90% of the original documentation, James noted.

The Promptdoc format, with narrow text, white space and callout headings, is very easy to read, she said. "Each document includes a master index that lists and briefly defines all modules in that document. And the first page of each module contains a table of contents, complete with page numbers, for that module.

"Because Promptdoc is not forms-oriented, it is readily adaptable to word processing technology, in our case a Wang [Laboratories, Inc.] VS-90," she said. "The entire Promptdoc workbook is automated on our word processor using glossaries."

Glossaries are programs that step the writer through each module, displaying standardized portions of the module and prompting for all required information, James said. The writer enters the information and depresses the execute key to proceed to the next section. The system automatically displays the section heading, tabs to the appropriate position and prompts for the required information.

Report Compares 300 Minis, Micros

IRVINE, Calif. — Easy Data Corp. has announced a research report that compares features and prices of small business computers.

Called "Computer Comparisons," the report includes more than 100 pages of information on more than 300 models of minicomputers and microcomputers, its publisher said.

A single copy of the report costs $50. A semiannual subscription costs $80 and a quarterly subscription costs $120.

Easy Data is located at Suite 338, 1600 Dove St., Newport Beach, Calif. 92660.

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Agriculture Department DP Center Grows With Cache, Not Disks

FORT COLLINS, Colo. — Planning ahead is more than a practice here at one of U.S. Department of Agriculture's (USDA) computer centers — it's a requirement.

For instance, realizing that conventional add-on disk subsystems would not provide its computer system with enough storage to handle the increasingly complex needs of the agencies it serves, the center purchased five cache disk subsystems to solve its problems.

When the DP staff at the Fort Collins Computer Center (FCCC) began evaluating the performance of its Sperry Univac 1100/84 and 1100/82 systems a little over a year ago, it quickly realized the systems' major constraints were their I/O subsystems.

"It wasn't a serious problem at the time," noted John Thoelke, FCCC's deputy director, "but our staff projections told us that this constraint was imminent. The work at the center used to be evenly divided between a business work load and a scientific one, but this was no longer the case. The work loads somehow merged, and everything we did seemed to require accessing a lot more data."

The two systems provide information processing support to several USDA agencies, including the Forest Service, Soil Conservation Service, Food and Nutrition Service and Animal and Plant Health Inspection Service.

After considering product offerings from several makers of cache systems, FCCC bought and installed five cache disk systems from Amperif Corp. that hold up to 600M bytes each.

Thoelke claimed the cache systems have boosted the I/O throughput of the Univac systems by 400%, provided a larger storage capacity in a smaller space and reduced power and cooling costs significantly.

He pointed out that the increased storage capacity and energy cost savings are necessary if FCCC is to stay in business.

"We have to go out and justify the FCCC's existence by comparing ourselves with commercial services that offer similar data base information. Therefore, we have to get the ultimate capacity out of our systems, while at the same time keeping our support and operating costs as low as possible."

Forest Service Program

The Forest Service uses a program, called Timber Sales Accounting (TSA), that was developed by the center. It is one of the more complex programs the center has online.

The FCCC-developed program performs every timber sales accounting function from the time a timber sales contract is awarded through the contract execution. "We are supporting the nationwide TSA system, and this is the first time we've been able to put it on one system across the Forest Service," Thoelke said.

Besides the five cache disk systems, the center also purchased from Amperif 15 disk subsystems made of 134 disk drives storing 54G bytes of information, three magnetic tape subsystems containing 32 tape drives, 13 telecommunications subsystems containing 560 terminations, eight processors, five controllers, three printers and various card readers and plotters.

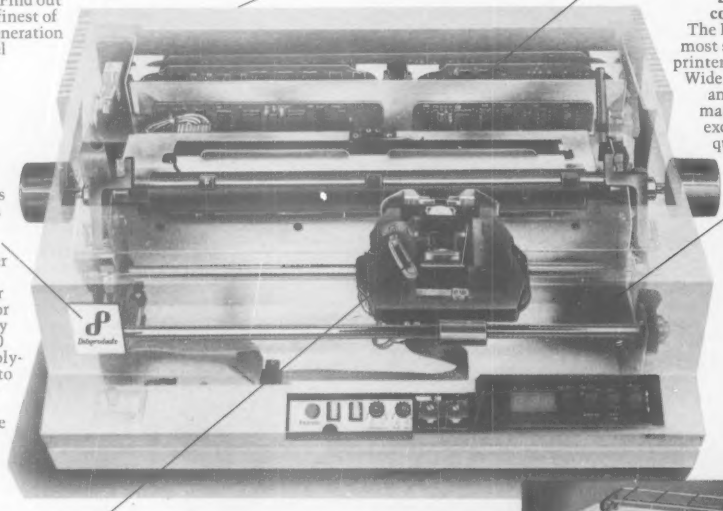
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English-Like Commands Useful

Food Chain Brings Decision Support In-House

TORONTO — The rocky shores of Nova Scotia, the woodlands surrounding Saskatoon, Sask., and the urban sprawls of Toronto and Montreal geographically do not have a lot in common. However, each location has been the subjects of thorough scrutiny and analysis — not by a government agency, but by a computer-based analysis system operated by one of Canada's leading grocery store chains.

Dominion Stores Ltd., with more than 240 locations, subjects all potential store sites to an extensive profitability investigation that looks at a number of factors including economic, social, geographic location, population density and historic and projected sales figures. The firm had been using a Fortran-based system, called Fipac, through a service bureau for its cost/benefit analyses, but recently brought a financial control and analysis package in-house to run on the its Sperry Univac 1100/60 mainframe, explained Doug Ward, director of corporate planning at Dominion. "We had reached a point . . . where it was plainly no longer economical to continue operating as we had been," he said. "Our data storage costs had increased to the point where it was decided to bring everything in-house onto a purchased management decision support system."

After looking at five packages, Dominion picked Financial Control System-Evaluation & Planning Systems (FCS-EPS) from EPS Consultants, Inc. of Toronto, to run on the company's Univac 1100/60.

"FCS-EPS was selected for a number of reasons," Ward said, "not the least of which were powerful financial subroutines, an English-like command system, and its ability to accept user-created input messages. [It's also] an excellent financial projection and budgeting tool."

Ward explained how it takes three departments to perform a cost/benefit evaluation for a potential site: the research department analyzes a site's geographic location, population growth and trends, sales potential and historic sales patterns. Concurrently, the real estate department analyzes economic factors such as rental or purchase costs, interest rates, construction costs and various other investment factors. All this data is then passed to corporate planning, input to the company's business models to project performance analyses on future costs, sales, depreciation or a number of other factors.

"It typically takes two years from initial analysis of a site to the day we open the doors for business, mostly because of real estate considerations," Ward noted.

Hands-On Use

The FCS-EPS' English-like command system allows for hands-on use by research and financial personnel, according to Ward. "The people working most closely with the site analysis can input their data directly. This effectively eliminates a dependence on the data processing department to get what we need."

While FCS-EPS is a useful tool in the cost/benefit analysis process for individual sites, it is of equal value and importance in the company's corporate financial planning, Ward maintained. The system's forecasting capabilities are utilized corporatewide, with "a large model that simulates the operations and financial position of each company on a quarterly basis. Five years' history is stored in the model and used in projecting the various revenue and expense accounts using the FCS-EPS forecasting module.

"Using this forecast, we can adjust our pricing levels to assure a profit for the company and its shareholders, while still maintaining a competitive price level that is attractive to our customers," he said.

QED Sciences Releases Reports On Software

WELLESLEY, Mass. — "Information Resource/Data Dictionary Systems" and "Data Base Management Systems for the Eighties" are the titles of two recently released reference reports from QED Information Sciences, Inc.

The first, by Henry and Sandra Lefkovits and Edgar Sibley, is said to present an in-depth look at current uses and features of data dictionary systems and goes on to describe eight commercially available systems.

The latter reportedly provides information on eight popular data base management systems, itemizing each package's data manipulation features, query capabilities, programming considerations, relevant access methods, communications facilities, and system installation specifics, according to the publishers.

Both reports are priced at $95. They are available from QED at P.O. Box 181, 180 Linden St., Wellesley, Mass. 02181.

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PHILADELPHIA — Computerized foreign trade operations not only help assure exporters of prompt payment, but they are providing Fidelity Bank of Philadelphia with new marketing leads.

Philadelphia's fourth largest bank issues some 400 letters of credit and 150 documentary collections monthly. Before the bank automated these transactions in 1979 with Cupertino, Calif.-based Four-Phase Systems, Inc.'s IV/65 system, the clerical staff typed each one individually.

"Because much of the verbiage in these documents is boilerplate, a good deal of clerical and management time went into typing, proofing and correcting them," said Thomas J. O'Rourke, vice-president of financial operations.

Words and Data

To speed up the process, Fidelity officials decided the bank needed a computer system that combined word processing for the text of the letters of credit and data processing for storing various data fields such as amounts, dates, currency, payment terms and the names and addresses of the various parties associated with each credit.

Using Four-Phase's Vision software package, O'Rourke developed applications that are used in many other areas within the Financial Operations Department. The applications enable his staff to prepare budgets, issue E bonds, trace customer problems, order supplies, report employee attendance, check tickler files and assist in the purchase and sale of foreign cash.

Since August 1982, the Credit Analysis Department has utilized Foreword, the vendor's word processing package, to prepare credit reports. At that time, there were three full-time typists and 10 analysts. Temporary help was required to keep up with the typing work load. With word processing, O'Rourke said, there is no need for temporary help and typing efficiency has almost doubled.

O'Rourke said the bank based its system selection on three criteria: multifunction capability, ease of operation and ease of programming.

After six months of evaluating five different vendors, O'Rourke said, Fidelity installed a Four-Phase IV/65 system with 12 multifunction workstations, 384K bytes of memory, 12.5M bytes of disk storage, three character printers and one 120 line/min printer. The bank has since upgraded to an IV/95 system with 32 workstations, 768K bytes of memory and 67M bytes of disk storage.

Fidelity also uses the IV/95 to handle the paperwork in its Foreign Check Collections Department. After the customer's checking account number, the currency denomination and the amount of the check have been entered, the system obtains the customer name and address from the bank's main IBM data base and obtains from its own data base the name and address of the foreign bank where the check will be sent. An advice and the check is then sent to the foreign bank with a copy forwarded to the customer. When the foreign bank remits the funds, the IV/95 produces all the accounting entries required to settle the transaction.

Fidelity's New York branch has also installed an IV/65 and uses the same applications developed by the Philadelphia office.

Automation Adds Four Benefits

PHILADELPHIA — Fidelity Bank's transition to automation has resulted in four primary benefits to the bank, Vice-President of Financial Operations Thomas J. O'Rourke observed:

- A temporary clerical staff is no longer needed.
- The number of forms required to process a letter of credit or documentary collection has been reduced from 20 to two.
- New marketing leads are generated through monthly reports listing all beneficiaries of the letters of credit and documentary collections.
- Because each terminal is multifunctional, the clerical staff can use its word processing capability to correspond with customers as well as interface directly with the IBM mainframe data base to obtain information needed prior to paying out funds for a particular transaction.

O'Rourke pointed out that a number of significant productivity improvements have occurred at Fidelity since the minicomputer-based system was installed. In addition, developing the software in-house has cost considerably less than purchasing various packages from software vendors, he said.

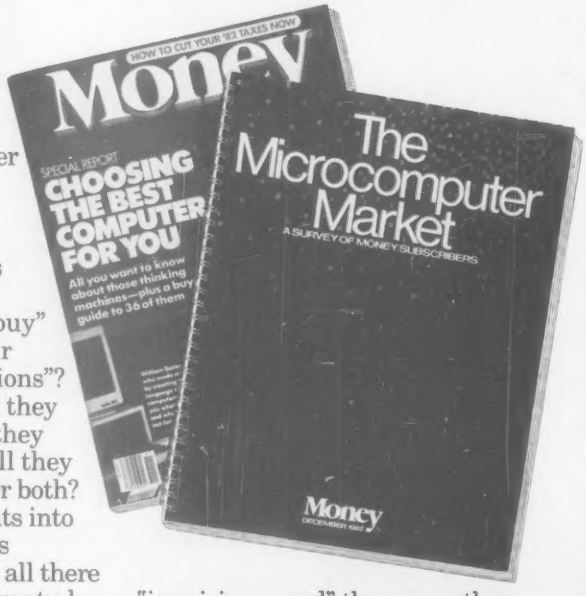
As for training on the system, O'Rourke added, the bank has relied on informal training sessions among employees.

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System Helps Supplier Keep Mailings, Inventory Updated

WILMINGTON, Calif. — A minerals-processing equipment supplier here faced a dilemma two years ago. It had a customer mailing list of more than 100,000 names and a several-thousand-piece inventory made up of 1,800 different items. Both the mailing list — a carefully cultivated business tool developed over the course of 23 years — and inventory were in constant flux.

Keeping them up to date was becoming more than the small staff at Sepor, Inc. could handle. "The mailing list is constantly growing as contacts move and new customers are added," explained Tom Alessio, vice-president of finance. "It penetrates to the requisitioner, the people that place the orders, the people we want to communicate with."

Worldwide catalog mailings help Sepor drum up some $1.7 million to $2 million in sales annually. The firm's products range from laboratory scales to heavy equipment such as ore and coal crushers.

Until 1981, the company used a service bureau to manage the mailing list. Although the service did the job well, it didn't give Sepor the flexibility to conduct business the way the firm wanted.

The service bureau printed out mailing labels when requested, Alessio noted, but "we didn't have much control." Realizing that the firm needed a way to access and update the list's data easily for day-to-day reference, in 1980 Alessio started a year-long shopping expedition for a computer.

Besides power and a large storage capacity, the firm needed a computer that could contain both the mailing list and the inventory/order entry data at the same time. Alessio didn't want to face shutting down his order entry system and taking it off the computer every time he wanted to update or print out the mailing list.

Alessio examined equipment from Digital Equipment Corp., Microdata Corp. and Applied Digital Data Systems, Inc. (Adds). A combination of "price, capacity and flexibility" led him to choose Adds' Mentor system, he said.

System Configuration

The Mentor system is comprised of a processor, tape drive, Texas Instruments, Inc. TI 810 printer and Adds Viewpoint terminal. Installed in November 1981, the system has 128K bytes of random-access memory and 30M bytes of rigid disk storage.

"The price was right for the storage capacity I was looking for," Alessio noted. "In the same price range, other systems were offering only a third as much storage. That didn't give me the flexibility I wanted."

The real key to Mentor's success at Sepor is the flexibility of having a powerful, data base-oriented computing capability in-house, he said. Through Adds' Info/Access, Alessio can now manipulate the mailing list and inventory/order data bases any way he wants to.

"We're designing reports from the data base of the mailing list that we would have had to request be written by the computing service we had," he explained. "They certainly could have done it, but it's a lot easier to do the modification right here on site. We see what we're going to get and then we generate it. Simple."

For the last four months, the system has run smoothly, Alessio said. There were "a few major problems," the first year, "but they came and fixed them," he recalled. Those problems encompassed "just about everything — disk drive, tape drive, new boards."

Even with problems, however, Sepor's operations were impacted "very little," he noted, due to the batch nature of the processing.

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Scheduler Controls Hospital's DP Operations

ATLANTA — A computer-aided scheduling and reporting system helped a university hospital here to organize and gain control of its work load.

The 600-bed Emory University Hospital, part of Emory Medical School, is a leading facility in the South for coronary bypass operations. It also performs more cornea transplants in its eye care center than anywhere in the nation.

The hospital's data processing staff of 35, which utilizes an IBM 4341 computer running under DOS/VSE, was in dire need of an automatic scheduling system to organize its activities. "Based on our backlog, it would have been expensive and difficult to justify a few man-years to develop our own scheduling system" rather than acquiring a package, Bob Attaway, manager of computer operations, said.

In March 1982, the DP department chose Software Concepts, Inc.'s Computer Scheduling and Reporting (Csar) system. It made its choice based on recommendations from other Csar users.

Known to Few

Prior to Csar, all the schedules were "in everybody's heads" and runtimes were known to only to a few. "In our implementation, we worked up a new naming standard, and for a few hours each day, we systematically put on one system at a time and made sure it was scheduling properly," Attaway said.

At the same time, the DP staff used Csar as an opportunity to clean up its JCL. Previously, having JCL in card format made it easy to change jobs without letting the scheduler know about it. But by eliminating the card system, the DP department has gained complete control over the environment, Attaway said.

In addition, system security has increased because, with Csar reports, the staff knows everything that is run on the system.

The nature of the work handled by the hospital's DP department dictates definite processing criteria. With its nursing management system, patient administration, budgeting and financial reports, order is critical because processing depends on earlier input.

If "jobs run just a little out of order, it causes a great deal of harm," Phil Fowler, senior systems analyst, said. "If you want to be sure all your jobs meet a certain standard or run on a specific day of the month or in a particular order, Csar provides a good opportunity to do that."

In the past, often the only way of knowing the status of a particular job was by asking the operator. "Now that's all controlled by the system; we know the jobs are run," Attaway said. And "you can't put a dollar figure on forgotten jobs and reruns," according to Ed Brown, assistant director of DP.

In turn, users' complaints have fallen off as the department's credibility has risen. "We now have peace of mind because we've eliminated those missed and out-of-sequence jobs," Attaway added.

Operating Efficiency

Efficiency of operation is another benefit cited by Brown. "When Csar was fully implemented, we immediately noticed a change in the efficiency of our operation," he said, crediting that change to rerun control and on-line automatic submission.

By having the jobs automatically submitted by Csar, the operator no longer has to find and load cards, allowing him to be more efficient.

Also, the shift manager and the operations manager, who jointly worked on the formal written schedule, are freed of that time-consuming task.

According to Fowler, Csar is "reliable, easy to use and the manual is fairly easy to understand." The hard-copy schedules serve as both a management tool and as a history.

Additionally, in a disaster recovery situation, since Csar has all jobs identified, it can back up to tape and recover them.

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Firm Finds New Backup System Worth Risk

SAN FRANCISCO — There is a certain amount of risk involved in becoming one of the first 12 users of an unproven software backup system and moving away from a comfortable home-grown computer system. However, in doing so, a large construction company here has not only saved a great deal of time, but has saved a lot of money.

"Our homegrown system was so inadequate, we decided to try it," explained Bob Perkins, manager of systems programming at Guy F. Atkinson Co. "The in-house project using IBM's Tape Dump program to provide VM disk backup to tape was ridiculous. The backup took 4½ hours and six reels of tape each night."

In December 1981, Perkins accepted a trial installation of a product called VMbackup from VM Software, Inc. of Falls Church, Va. The firm's computer system consists of two IBM 4341 Model Group 1 processors running VM/SP and utilizing Control Data Corp.'s 3350-equivalent, double-density disk drives.

According to Perkins, when a terminal user required that a previously backed-up file be restored from tape to the user's minidisk, operations people had to locate and search through the printout that cross-referenced the backup by tape volume serial number, the user's file number and date submitted. They then had to mount the tape to restore the data.

In addition, the modified Tape Dump system had to be rewritten every time that IBM came out with a new release of its VM/SP.

"With VMbackup, the nightly backup operation took only 20 minutes to half an hour and less than one reel of tape," Perkins said. "In addition to saving computer time and 27 reels of tape a week, we found that new release upgrades were trivial. That allowed our systems programmers to have more time to work on other tasks.

"We also found that VMbackup's on-line catalog greatly enhanced our system integrity, since it eliminated cross-referenced printouts and reduced the chance for human error."

As VMbackup went into production, Perkins' staff discovered additional benefits. For example, when recent hardware errors caused two of the disk volumes to be unusable, the disk volume was replaced and 187 minidisks were restored from tape by VMbackup in four hours.

"We would have had to work for 16 straight hours to restore those minidisks with the old system," Perkins claimed.

"This system does everything you can reasonably expect from a VM backup/restore environment. I think we got a great value for our investment. After all, our job is to provide a service to our users, not write custom utilities for VM," he said.



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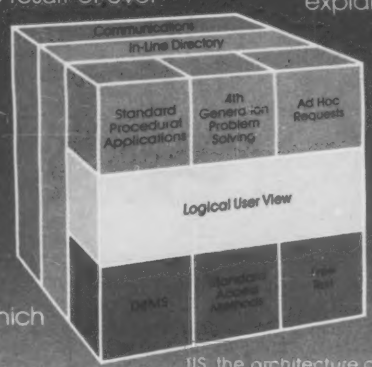
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DCA Seminar to Cover Fourth-Generation DBMS

LYNNFIELD, Mass. — Digital Consulting Associates, Inc. (DCA) will be conducting a seminar on fourth-generation data management June 20-21 at the Tarrytown Hilton in Tarrytown, N.Y.

The seminar is said to condense information gathered by DCA as sponsor of the 1983 National Data Base Management Symposium. The two-day meet will explain how data base management system (DBMS) methodologies are tied in with recent developments in high-productivity software.

DBMS integration with teleprocessing, report writing, query, dictionaries, application generators, decision support systems, graphics and data base designers will be discussed and analyzed. In addition, software for all sizes of hardware from personal computers to megacomputers will be covered.

Dr. George Schussel, DCA president and chairman of the National Data Base Management Symposium, will lead the seminar. All seminar attendees will receive DCA's 400-page workbook "4th Generation Data Management," which reportedly provides detailed product information on the most widely used data management software.

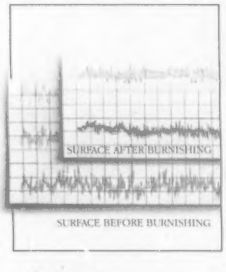
The seminar costs $650. More information is available from DCA, which can be reached through P.O. Box 97, Lynnfield, Mass. 01940.

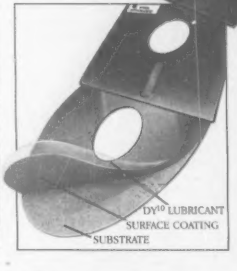
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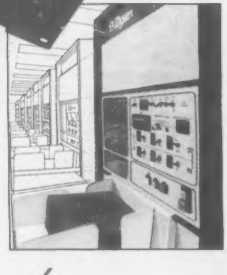
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Nursery Plants System Upgrade

SACRAMENTO, Calif. — Oki Nursery is evidence of the fact that no matter what business you are in, there is a role for computers to play. One of the largest wholesale nursery operations in the West, the company recognized the need for something more than ledgers, adding machines and manual billing and filing procedures in running an efficient agribusiness enterprise.

Oki Nursery distributes landscape ornamental trees, shrubs, plants and greenhouse crops all over the country. Based here, it has branches in San Jose, Calif., and Portland, Ore. It utilizes an IBM System/38 small business system for applications that include getting the picking labels out to the Production Department, sorting out the flats of bedding plants by variety, organizing priorities for shipment and setting up truck routes.

Oki Nursery uses the computer for such functions as electronic mail and management reports.

The firm recently upgraded to the System/38 from a System/3. "The System/38 has allowed us to extend our data processing abilities to our branches by use of a special series of telephone lines. It's amazingly fast and has made our programmers from two to three times more efficient," George Sam Oki, vice-president of administration, claimed.

Oki Nursery, a family-run business, first became involved with computers in the early 1960s, when it acquired an IBM 1403. In 1970, the System/3 was introduced.

The System/3 "was a real computer, and we were able to build on it to satisfy fully the needs of the time. Its main purpose was to facilitate us in providing up-to-date information regarding crops and order status," Oki said. "It was particularly handy when it came to holiday bookings, such as Christmas, when items such as poinsettias are major sellers. We have one basic target date — Christmas day — and we could send our sales force out in the field to book orders. We gathered estimates on a number of sales, the performance of [salesmen] and how many units we could expect to deliver."

Should Office Push for Own Micro?

Q Last year, we purchased a microcomputer and Visicorp's Visicalc software for the company accounting office. The micro was idle for about six months until someone decided to figure out how to use it. Since then, half a dozen people in our office and at least as many in other offices keep the system tied up. To alleviate this bottleneck, we decided to order three more just like it.

Our policy on hardware acquisition was recently revised. Now, all micro and word processing purchases must be approved by the Hardware Committee in the management information systems department. As its first official decision, the committee denied our request. The reason given was that we had just purchased several accounting systems that would provide us with similar or better capabilities.

These systems will not be implemented for at least a year. We look forward to that, but what about now? We have an overloaded $5,000 micro that has paid for itself many times over.

The purchase of these micros is a matter of continuous debate. The committee wants to hold down the proliferation of micros within the company (we now have two). Money has never been a question.

Do you think we should give up the idea of purchasing the micros or keep the issue alive?

A I, too, am against the uncontrolled proliferation of micros and word processing equipment. You, however, have an established need and an immediate opportunity to increase productivity. It sounds a little like the Hardware Committee is overemphasizing the proliferation issue. In so doing, it must have lost sight of the fact that for $15,000, life can be made a lot easier for people.

Keep the issue alive.

Q I have worked in data processing for six years. My experience is in operations and administrative positions. Currently, I am a DP librarian.

Without programming experience or post-secondary education, what can I do to further my DP career?

A What are your career goals? If you wish to move up the operations and administrative ladder or into systems development and/or management, you should pursue an associate or bachelor's degree. A college degree is an implied or explicit prerequisite in most organizations for programming, analyst and management positions.

Q After spending three years in DP, I quit and am now working in a non-DP-related business. No longer do I worry about inefficient code, inconsiderate users, unrealistic deadlines and bloated egos. My health and attitude have improved and my future looks brighter than ever.

Several of my former colleagues want to change careers, but probably will not. I wrote this letter just to confirm that there is life after DP.

A The computer field is not everyone's cup of tea. Tens of thousands have stepped blindly into the field of "opportunity." The average community college will have 400 to 500 students in its DP program. One has 10,000. Combine these graduates with those of four-year institutions and you have an enormous number of people entering the DP job market each year.

With this kind of volume, a few misguided career decisions are inevitable. I am happy you have found success.

Q You recently answered a question which, except for some minor details, I could have written myself three years ago – the question about retiring from the military and having 10 years of DP experience in management.

In theory, your answer was a good one. In practice, it just isn't so. I recruited extensively and received several offers, but all were for programmer positions, not management.

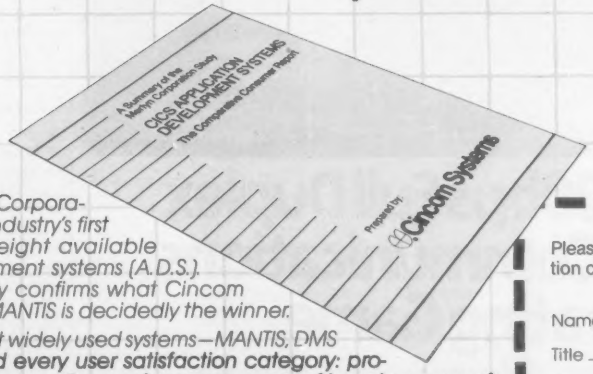
Turnaround Time
By Larry E. Long

I may work back up to management some day, but for the moment I am back to slugging it out in the programming trenches.

A I thought then and still believe that the education, skills and performance record of the original correspondent were unique and highly marketable. Over the years, many of my correspondents have been retired military DPers. I invite those who have sought DP jobs to give me some feedback on the job situation and on attitudes toward hiring retired military DPers. I will compile the responses and try to paint the "real life" picture of the employment prospects for this rather large group of people.

Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, *P.O. Box 880, Framingham, Mass. 01701.*

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*"CICS Application Development Systems: The Comparative Consumer Report." Written and published by MERLYN CORPORATION. Survey data from Focus Research System, Inc. 1982.

Please send me Cincom's summary of the information contained in the Merlyn Corporation study.

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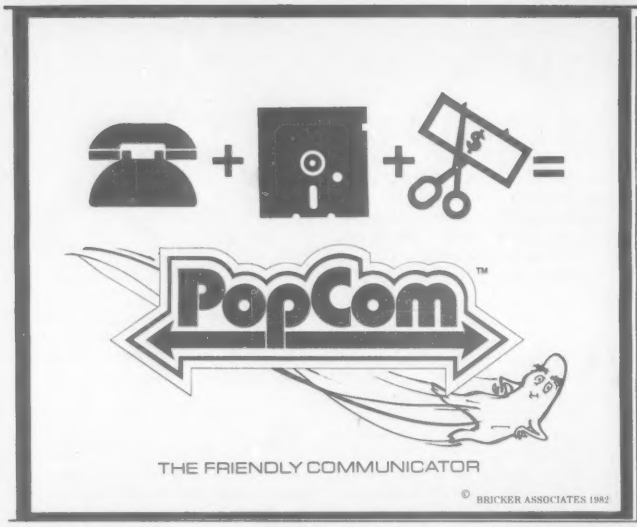
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Gas Pipeline Firm Fuels Conversion With System

HOUSTON — An on-line applications development system for CICS has proven to be both a time and manpower saver for the data center of a gas transmission company, resulting in productivity gains of up to 200% for at least one application.

The Texas-based Columbia Gulf Transmission Co. runs gas pipelines offshore and in six states and has about 700 employees, 21 of whom work in the DP area. Although the firm has an IBM 4331 running under DOS/VSE, a sister company purchased a non-IBM system. The subsequent conversion project, which involved changing about 100 screens from a Hewlett-Packard HP 3000 to a 4331 format, fell to Scott Adams, manager of systems and programming for Columbia Gulf Transmission.

"I had four months to accomplish the task, and we did it with [Pansophic Systems, Inc.'s] MIS/OL," he said. Adams explained that the HP 3000 system was purchased in October, and his group was asked to complete the conversion by March 15. "There was no way we could do this using command-level CICS coding," he said.

A minimum of one man-week per screen would have been required for the conversion project without the use of a development tool. This comes out to approximately 24 man-months vs. the four man-months needed using MIS/OL, Adams said.

With time a critical factor, Adams selected five software systems for review: IBM's DMS, Oxford Software Corp.'s UFO, Art Benjamin's (of Canada) Act 1, Cincom Systems, Inc.'s Mantis and Pansophic's MIS/OL.

Time Constraints No. 1

Due to time constraints, cost was not a major factor. The two primary criteria were "how fast we could put the system in and whether we could get the payroll system up and on-line within the installation period," he said.

Adams tried to get each system in for a free trial period and succeeded with DMS, MIS/OL and Act 1. Another sister corporation, Columbia Gas Service Co., was running Mantis, so Adams was able to collect data from that firm. From there, Adams looked at the benefits of each system. Thirty days after he began his search, he settled on MIS/OL — despite the fact that it was the most expensive choice at the time.

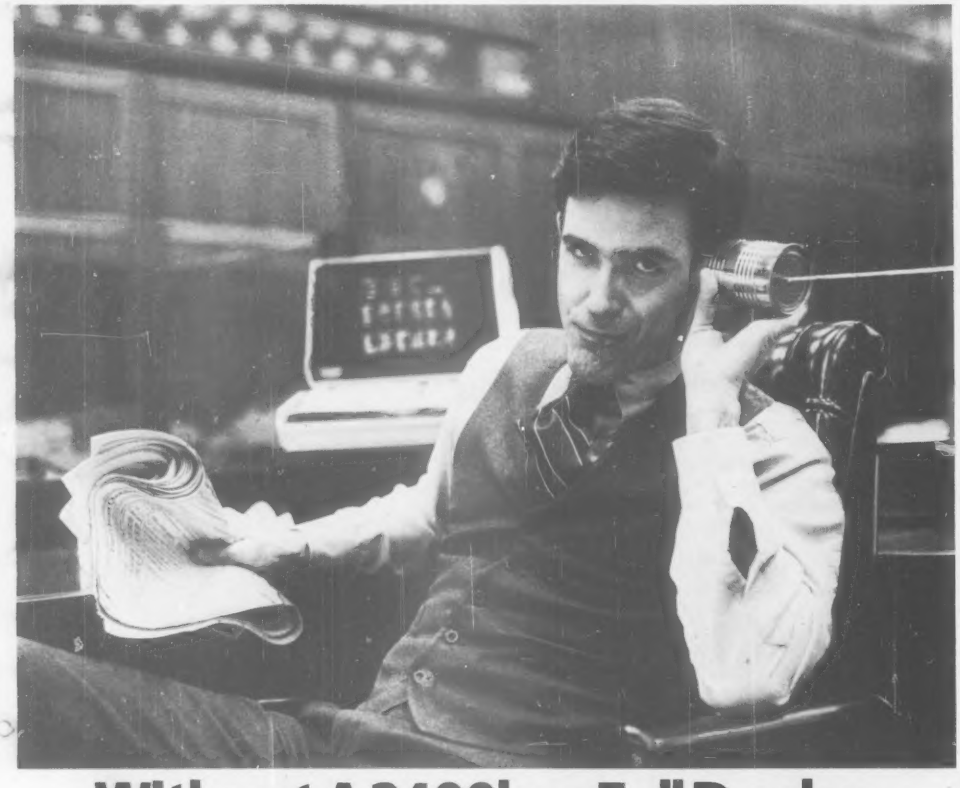
Among the benefits Columbia Gulf found with MIS/OL were an ad hoc query facility (report writer); an on-line application tool that allows users to "have small applications up in an hour without coding a line"; superior data security, "right down to the data elements"; recovery capabilities; ease of use; and no new language requirements, according to Adams.

More specifically, "MIS/OL protects us from CICS problems that have plagued many data sites. We have not had a CICS dump in three months," Adams said. Also, it took about two weeks for users to become comfortable with the software, which he said is reentrant and does not take up a large number of resources.

Adams singled out MIS/OL's provision of access to any file structure as a definite plus. Columbia Gulf's payroll and personnel files are all Vsam and MIS/OL is used to access them, he said.

In an integrated petroleum accounting system with eight subsystems, Adams has "seen a jump in the neighborhood of 150% to 200% in productivity vs. CICS command level."

Now that the conversion project is completed and Adams has had time to evaluate his purchase, he "would have made the same decision."



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Data Dictionary Cuts Red Tape for Blue Cross

BUFFALO, N.Y. — The use of a data dictionary has reduced paperwork, increased accuracy and provided on-line capabilities and disaster protection for Blue Cross of Western New York (BCWNY) here.

With more than a million members in eight counties, BCWNY operates its data center primarily in a centralized environment. "We put a lot of emphasis on data base administration, and the data dictionary is an integral part of that," noted Gary Kerl, director of systems services.

The shop has an IBM 3032 running VS1 and an array of peripheral equipment, including about 120 CRTs for use by clerical and management personnel. The group brought in IBM's IMS data base management system in 1976, and University Computing Co.'s UCC Ten Data Dictionary/Manager was installed later that year.

UCC Ten's basic functions are to manage file definitions for data base and conventional systems, end-user computing documentation and the

a result of this effort, he added. One of the first gave the designers more material to work with when customizing programs. It combines what BCWNY's final Cobol source would resemble with the definitions from the UCC Ten dictionary.

Using this concept, the designer can make a brief note on that report for a field and the programmers can work from this without having to know any more about the field. They know what the field location is, what the definition is and what the attributes are. They also have the Cobol source entry that they will eventually code into the program.

"We feel that for our end-user computing to be effective and efficient, the information center should be closely tied to the data base administrator," Robinson said. "To handle this, one person acts as a coordinator for a particular end-user language.

"This individual then utilizes the data base administration information to help the user generate reports from production files and, in some cases, helps them to create their own files," he added.

Even though the shop is mainly Cobol, this plan relies heavily on languages such as Informatics General Corp.'s Mark IV and SAS Institute, Inc.'s Statistical Analysis System (SAS) in user areas as well as DP.

Thus, it's important to keep that consistency in the dictionary so that it is still the same field, the same file and the same definition regardless of language or user. "We have a program that will take a UCC Ten glossary by segment ID and generate input for a Mark IV glossary generation, as well as an SAS I/O area," Robinson explained.

Documenting the IMS environment is the most obvious benefit BCWNY has had from the data dictionary. The data base administration staff creates program documentation and data base and segment documentation.

Some library audit programs are in place already and more are scheduled. Anything new that is developed relative to data base segment descriptions or program information is handled through the dictionary.



Operates in Different States

Data File Helps Firm Keep Pace With Tax Rates

NEW YORK — Something had to give at Management Assistance, Inc.'s (MAI) tax department if it was going to be able to keep pace with the company's rapid growth over the past decade.

MAI, the computer vendor whose Basic Four Information Systems Division is located in Tustin, Calif., and whose Sorbus Service Division is based in Frazer, Pa., emerged from near-bankruptcy in 1970 to a position within the 600 of the top firms among the Fortune 1,000. "We were just too busy growing, and the way we were preparing our tax returns was archaic," recalled John F. Hennessey, assistant treasurer for taxes. "It was like typing hunt-and-peck style, compared with using a modern high-speed electronic typewriter or word processor."

With Hennessey's urging, the tax department computerized its operations. However, the problem of determining the sales and property tax rates in the states, cities and counties in which MAI operates became a time-consuming chore. Hundreds of hours of work were required to determine and stay abreast of the tax rates in the various locations.

Faced with the prospect of alleviating or even eliminating the manual look-up procedures required to compile the massive array of sales tax data, Hennessey consulted with Ray Westphal, president of Vertex Systems, Inc. of Wayne, Pa., about his Salestax service, a computerized file of current tax rates for all sales tax jurisdictions in the U.S. and Canada.

Produced monthly in computer printout form and on magnetic tape, the Salestax data includes standardized tax data for all U.S. jurisdictions with populations from as few as 250 people to the largest cities in the country.

The service's file represents almost 42,000 locations, providing the combined city, county and state rates with the effective dates for each taxing jurisdiction. In addition, monthly updates from Vertex are designed to identify all changes.

Hennessey adopted the system in 1978 primarily because the Vertex tapes could be fed into the IBM 370 system MAI was running in its Tustin, Calif., location. Tax information therefore could be accessed and pulled from memory to apply the correct sales tax rates during billing periods.

Previous dependence on other tax reference sources had been less than ideal, Hennessey said. The published information was not standardized and, in many instances, it was inaccurate because it was out of date. With the Vertex system, for which information is received directly from the states and independent localities, the monthly tapes facilitate computer conversion. Staying abreast of tax changes by computer is becoming increasingly important because of the

and conventional systems, end-user computing, documentation and the IMS environment.

"One of our major efforts in using the dictionary is a file definition project," explained Tom Robinson, data base administrator. "We have a lot of systems that were written years ago, even before we brought in IMS. In some instances, we have 40 to 60 programs accessing the same file."

Project Requirements

The project requires that all the data elements be defined and that a common I/O area be created for them. These definitions are used to enhance program maintenance, promote common understanding of the data that exists among users and DP personnel and are also used as a basis for data base design in new systems.

This gives the data base administration department a good handle not only on the data base management side but also on all other files, Robinson explained. The programs are then converted to utilize the new I/O area.

Several programs were written as

Gardulski to Head ISO Groups for Ansi

NEW YORK — Joan Gardulski has been named program administrator for the Information Processing Systems Department of the American National Standards Institute (Ansi). Gardulski will administer the secretariats of a number of subcommittees of the International Standards Organization (ISO). Ansi is the U.S. member of ISO.

Gardulski will be responsible for four subcommittees of ISO Technical Committee 97, Information Processing Systems: programming languages, flexible magnetic media, instrumentation tape and representation of data elements.

In addition, Gardulski assumes responsibility for a subcommittee on data elements and interchange formats of ISO Technical Committee 154, Documents and Data Elements in Administration, Commerce and Industry.

She will also be responsible for providing staff support to Ansi's Information Systems Standards Board.



creasingly important because of the dramatic changes in state and local taxes, Hennessey noted.

Biggest Advantage

From Hennessey's standpoint, in addition to having the most current dates available, the biggest advantage is in "having a tape that completely automates the combined rate for total billing purposes." New York State, for example, includes state, city and county rates. New York City and its surrounding counties have an additional .25% rate for the area's transit system. This information is contained on the Salestax tape. When the system is applied to a particular location, the tape provides the current rate for each taxing jurisdiction, he explained.

"The system has proved highly valuable for billing customers with multiple U.S. locations," he continued. "No two taxing jurisdictions are the same, but this system helps to minimize the problem because the computer gives us accurate and instantaneous sales tax data to facilitate the billing operations. And, with the increasing dependence on local governments to support their own tax revenues, the problem of keeping up with changes will continue to grow."

For multiple-location customers, the appropriate tax rate is assigned for each location by a dash and/or a digit, he explained. The computer subsequently unscrambles the code and applies the correct rate to the installation location.

Further consultation with Vertex about a year ago led to MAI's adoption of a new service that provides property tax data in the form of hard copy. This includes the current property tax available for each location, as well as the names, addresses and phone numbers of the tax assessors in their respective locations.

As MAI continues to expand, its tax compliance requirements increase. "We process more than 6,000 tax returns a year, with sales and property tax returns comprising a major portion of this compliance, so we've set up a tax calendar that lists tax return and payment due dates in chronological order. Not a day passes that we do not use the system to meet sales and property tax compliance requirements," he added.

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For more information to help you compare the CONTINUOUS COMPATIBLE COMPUTER with the 4300s, contact Manager of Market Support at IPL Systems, Inc., 1370 Main Street, Waltham, Massachusetts 02254. 617-890-6620.

IPL's 4480.



Network Service Connects Insurer, Independent Agents

PHILADELPHIA — An insurance industry data processing network developed by the Insurance Institute for Research, White Plains, N.Y., was unveiled here at Reliance Insurance Co. this month. It enables independent agents with computer equipment to transact business with network member companies.

Called the Insurance Value-Added Network Service (Ivans), the agency-company computer linkup is scheduled to become fully operational in the third quarter of this year. Twenty-one property/casualty companies are currently members of Ivans, which was established in response to an insurance industry association proposal.

The principal goal of Ivans is to make electronic communication between agents and companies feasible and cost-effective, according to William Pollard, chairman and chief executive officer of Reliance. Additional advantages are expected to include reduced overall operational costs for insurance, agents and companies; elimination of duplicate equipment and procedures between agents and company systems; and a centralized facility via a toll-free telephone number for problem reporting and resolution.

Further details on the Ivans project can be obtained from Reliance headquarters at 4 Penn Center Plaza, Philadelphia, Pa. 19103.

APL83 Slated for April 10-13; Weinberg to Keynote Meet

ROCKVILLE, Md. — The annual International APL Conference will be held here April 10-13 by the Association for Computing Machinery (ACM) and its Special Interest Group for APL (SigAPL).

The keynote speaker at APL83 will be Gerald Weinberg, author of *The Psychology of Computer Programming*. Weinberg's speech is titled "APL — A (Very) Personal Language."

Other speakers will include Prof. Michael A. Jenkins of Queen's University in Kingston, Ont., who will speak on the development of the Nial language, which incorporates concepts from APL and Lisp; and Paul Berry of I.P. Sharp Associates Ltd., who will speak on practical approaches for designing APL programs with the user in mind.

Papers will cover commercial and scientific APL applications, file systems, data base management systems and others.

The registration fee for ACM and SigAPL members is $160 before April 8 or $180 at the conference. For others, fees are $185 or $205, respectively. Further information can be obtained from APL83 Registrar, I.P. Sharp Associates, Suite 305, 2033 K St. N.W., Washington, D.C. 20006.

Warnier Prize For Informatics Seeks Nominees

TOPEKA, Kan. — Nominations for the first J.D. Warnier Prize, recognizing outstanding contributions to informatics, are now being accepted through May 1 by the Warnier Prize Committee.

The prize will be awarded Oct. 11 at the 8th annual Data Structured Systems Development (DSSD) Users Conference here. Initial funding for the prize is being provided by Ken Orr and Associates, Inc., a computer systems research company that developed DSSD.

Named for Jean-Dominique Warnier of Paris, the prize was established recently to recognize major contributions to the theory and practical application of informatics, the science involving the analysis, design and implementation of information systems.

Recently retired, Warnier has been involved in data processing since 1956 — first as an analyst and programmer, later as a teacher and writer. His books on the logical construction of programs and systems have been translated from French into Spanish, Japanese, Italian and English.

Nominations should include a biographical sketch of the nominee and an explanation of his or her work in the field. They should be submitted in writing by May 1 to the Warnier Prize Selection Committee, Gerald Weinberg, Chairman, 1725 Gage Blvd., Topeka, Kan. 66604.



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Developed by Own MIS Staff

Package Saves $300,000 for Supermarket Chain

By Bob Johnson
CW New York Bureau

SCHENECTADY, N.Y. — More than $300,000 was saved by a supermarket chain here in the first year it used a Direct Store Delivery (DSD) software package developed by its management information systems (MIS) staff.

Price Chopper Supermarkets, a medium-size chain with annual sales close to $500 million, said that its DSD system helped save $200,000 in its first year of use by alerting the supermarket not to pay for unauthorized shipments and unannounced cost increases and keeping it from paying for promotion items priced higher than the usual rate. The system saved another $120,000 by allowing the transfer of bookkeeping functions out of the stores and into the company's headquarters.

The chain said that the very first error report generated by DSD listed products accepted at stores without authorization, cost differences of 25 cents for the same item at stores just five miles apart and, in one case, cost differences in deliveries made to different stores by the same vendor sales-delivery person.

"We knew immediately that the system would be a real asset in running the business," David Younts, vice-president of sales and merchandising, explained. "These are savings that recur every year, and their value actually increases in this inflationary economy."

The system runs on Price Chopper's IBM 4341 CPU under the DOS/VSE operating system and has six IBM 3270 data entry terminals connected to it. It is currently being marketed by IBM as an Installed User Program.

Dennet W. Withington, the chain's vice-president of MIS and one of the package's developers, said that the creation of the program proved that the DSD function could be brought under control. "It was not easy, and we had to convince a number of people along the way, but now everyone agrees the time, effort and money all of us put into our DSD system has been a solid investment," he commented.

The supermarkets are responsible for thousands of invoices monthly that have to be audited and checked against authorized contracts with vendors. In addition, the store receiver is supposed to verify that each shipment is authorized, count the load against the vendor's receipt and check the quantity of the delivered products.

'No Price Integrity'

This wide variety of vendor invoice forms made it difficult to keep an accurate count of store deliveries and quantity of products. "The situation begged for correction," Withington said. "In our case, which was typical of industry experience, there was no price integrity. We simply factored the vendor's cost by a given percentage to arrive at a price that should have yielded an appropriate margin. But that broke down when vendors lowered prices for special promotions, and DSD items are among the most heavily promoted we carry. We had no way of knowing whether we were making a profit with a vendor, let alone how much."

In an attempt to rectify the problem, Price Chopper increased its bookkeeping staff to audit further vendor invoices and apply retail price factors for deliveries. However, the manual system only yielded approximations at best and they were prone to error. Vendors' statements still had to be reconciled against the delivery tickets, and this was only done for 10% of the invoices, the supermarket said.

"Our first step was to create a data base to comply with unit price shelf tag regulations and to support universal pricing code [UPC] checkout systems. Every product was keyed by UPC code, described, identified by pack or unit, priced and linked to vendor or vendors and stores," Withington noted.

Withington explained that store "paper" or records of delivery invoices are received by the company's headquarters on a daily basis for blind entry into the system. Here, the DSD system checks the vendor contract cost for items against what was actually delivered.

"In this way we pick up errors in pricing and the delivery of unauthorized items," he said.



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Navaho Children to Learn To Speak English Language With Micro-Driven System

By Tom Henkel
CW Staff

COLUMBUS, Ohio — Researchers at Battelle Memorial Institute here have undertaken a project to teach Navaho children — whose language is image-oriented and rarely written — to speak English by using off-the-shelf microcomputers equipped to integrate images and spoken words.

While the idea of using computers as a teaching aid is not new, researchers here contend it may be the only practical way of bridging significant gaps between the English and Navaho languages.

Besides being image-oriented, the Navaho language is syntactically opposite to English, according to Dr. Jack Sisson, education and training program manager at Battelle.

For example, the literal Navaho translation of the English phrase "go see the black dog" is "black dog go see," Sisson said.

Since many Navaho children are raised with Navaho as their primary language, they often have problems assimilating into the English-speaking school system. Navaho children traditionally score lower on standardized tests such as the Scholastic Aptitude Test, but "it's not that they are any less intelligent," Sisson said.

Micro-Driven System

Battelle, a nonprofit research and development organization, was asked by the public school system of Chinle, Ariz., (part of the 7,000-acre Navaho reservation) to develop a microcomputer-driven training system that would incorporate an audio attachment to help Navaho children relate printed words with images.

However, the Battelle project is not aimed at developing a system based around a specific vendor's system. Instead, the institute is working to develop a transportable software package that can be used on a variety of off-the-shelf microcomputers — thus allowing other school districts to use the same program.

The transportability also would allow the system to be adapted for the various Navaho dialects, Sisson noted.

Still in the design stages, the package is being developed in UCSD Pascal, a transportable version of the Pascal programming language. When it reaches the final design stage, probably this summer, the package will incorporate a recorded dictionary of English and Navaho words.

The system employs a lot of graphic simulations, such as Navaho Help messages that present graphic interpretations of English sentences. "We've had to be very selective in the words we use," Sisson said, noting that Battelle is trying to fit the English-Navaho dictionary on one floppy disk.

Here again, the Navaho language presents some unique problems. Navahos have completely different ways of expressing phrases that are fairly similar in English. For example, phrases like "go to the trees" and "go to the pond" are very similar in English, but differ dramatically in Navaho.

The teaching package is being designed to offer several levels of sophistication. Sisson said a basic level, for example, would teach children to relate English words to Navaho symbols.

However, the system is also designed to offer English sentences with color-keyed words and scrambled English sentences.

Focus Users Form Group For New England

HARTFORD, Conn. — A group for New England users of Information Builders, Inc.'s Focus data base management system has been formed. Membership dues are not currently required, according to a spokeswoman.

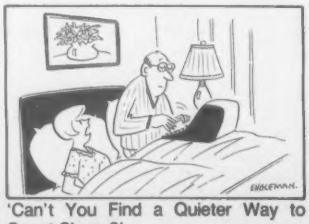
At its initial meeting last month, the Focus Users of New England (FUN) approved a set of group objectives, a constitution and bylaws. The meeting was attended by representatives of 20 Connecticut-area companies that use Focus.

FUN objectives include serving as a voice to Information Builders, providing a forum for the exchange of technical information among companies and sharing educational information.

Officers elected for 1983 include Alan Atkins of Travelers Insurance Co., president; Timothy Scudder of Cheeseborough Ponds, vice-president; and Maryanne Salamon of Travelers Insurance, secretary/treasurer. Kari Korell of Hartford Insurance Group was chosen program chairwoman for the next FUN meeting, tentatively scheduled for the third quarter.

FUN, which is based in Connecticut, is not the only New England-area group serving Focus users. Korell noted there is also a group based in Boston — The New England Focus Users Group (Nefug) — and suggested the possibility of a future merger of the two groups with two or more area chapters.

Users seeking more information about FUN can reach Korell at Hartford Insurance Group, Hartford Plaza, Hartford, Conn. 06115. Information about Nefug is available from Paul Harris, John Hancock Insurance Co., P.O. Box 111, T56, Boston, Mass. 02117.



'Can't You Find a Quieter Way to Count Sheep?'

Series of Consumer Reports Surveys Hospital DP Gear

GAINESVILLE, Fla. — Medical Systems Research, Inc. recently made available a series of consumer reports on data processing equipment for hospitals, including product analyses of word processors, comparative studies of data processing budgets and statistical analyses of the data base in six separate hospital departments.

The result of a two-year research project at the University of Florida on the hospital data processing industry, the eight volumes of data provide information to hospitals that need detailed reports on available hardware and software, according to Dr. Ralph Grams, a pathology professor and the editor for the publications.

The reports focus on the following hospital departments: finance and accounting, admissions/registration, nursing station/order entry, laboratory, pharmacy and radiology.

Ten additional volumes addressed to the computer industry focus on potential customers in the hospital marketplace, Grams added.

"The volumes for the computer industry explore what kinds of systems and designs are needed and how well the current hardware and software are performing," Grams said.

The volumes for hospitals, "Consumer Reports," cost $300 each. "Market Reports" for the computer industry cost $1,200 each. More information is available from Medical Systems Research, Inc., Suite C-2, 901 N.W. 8th Ave., Gainesville, Fla. 32601.

AIM '82 Polls Data Centers Serving Thrifts

CHICAGO — The Association of Information Managers for Financial Institutions (AIM) has released the 1982 "Thrift Institution Automation Survey." The 300-page survey describes 536 data centers serving thrift institutions nationwide.

The survey includes hardware, software, staffing and applications information about in-house data centers and independent service bureaus that provide on-line deposit and lending services.

Seven cross-references categorize the survey alphabetically, geographically and by number of accounts received. Manufacturers and models of CPUs, automated teller machines and minicomputers are also categorized, a spokesman said.

The survey costs $50 for AIM members and $200 for nonmembers. AIM is a division of Financial Managers Society for Savings Institutions, Inc., 111 E. Wacker Drive, Chicago, Ill. 60601.

Free Ada Guide Explains Techniques

ROCKVILLE, Md. — A six-page guide for Ada applications programmers which reportedly illustrates proven techniques for efficient program structuring in the Department of Defense-sponsored language is available free of charge from Intellimac, Inc. here.

Actual examples show preferred methods for in-house standardization of program syntax. Style rules are said to help enhance program maintainability and decrease software life-cycle costs.

These methods were derived empirically by Intellimac from 100,000 lines of Ada code developed and delivered over a 22-month period.

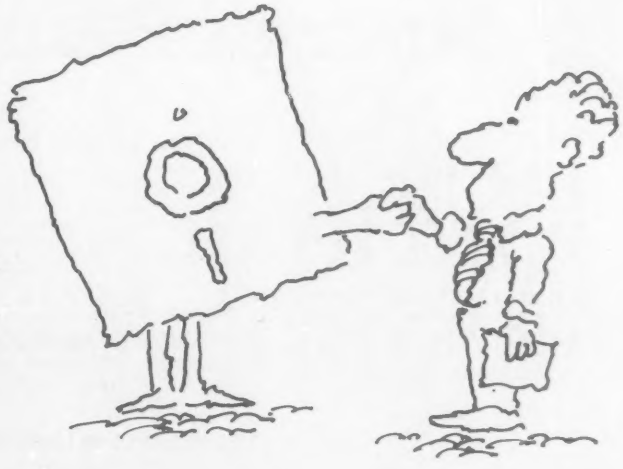
The free manual can be obtained by writing to Intellimac, Inc., Sixth Floor, 6001 Montrose Road, Rockville, Md. 20852.

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PARA RESEARCH

Efficient Tracking Method Needed

System Speeds Up Firm's Turnaround of Parts

WICHITA, Kan. — How serious can a company be when some of its leading products are called "Flying Bobs," "Zipper" and "Yo-Yo?"

In the case of Chance Manufacturing Co., the answer is: very serious.

Chance Manufacturing's business is the innovation, production and marketing of amusement rides designed to appeal to those whose idea of a good time is to have the daylights scared out of them at state and county fairs, traveling carnivals and amusement parks.

When Chance's inventory soared in 1972 from 8,000 items to nearly 30,000, Richard Chance, president of the company, decided to switch from the each-part-on-a-card manual system of inventory control to data processing.

"There had to be an efficient way to keep track of all these parts," Chance said. "So we went to data processing through a service bureau, whose control system was based primarily on batch processing. That looked all right in theory."

Frustrating Years

The company then went through "two frustrating years with that approach before we were forced to admit that it wasn't taking care of our needs at all. The problem was that we just weren't getting the turnaround we needed. We wanted to have inventory and job-costing information immediately, not a week later."

Meanwhile, Chance continued, "numerous transactions were taking place within the company. We were in a period of almost unbelievable growth and our inventories were in a state of constant flux. Quite honestly, most of the time we didn't know where we stood."

Eventually, the company called in a local data processing consultant who recommended in-house data processing. After looking at several systems, Chance Manufacturing decided on the 2200 system from Wang Laboratories, Inc. of Lowell, Mass. The Wang system went on-line in the spring of 1976.

"We went with the Wang system because there was no comparable product on the market at the time," Chance added. "The other companies in data processing tended to have software which was essentially batch-oriented; this was too conservative and too old-fashioned for what we wanted to do. We needed to access and act on information immediately.

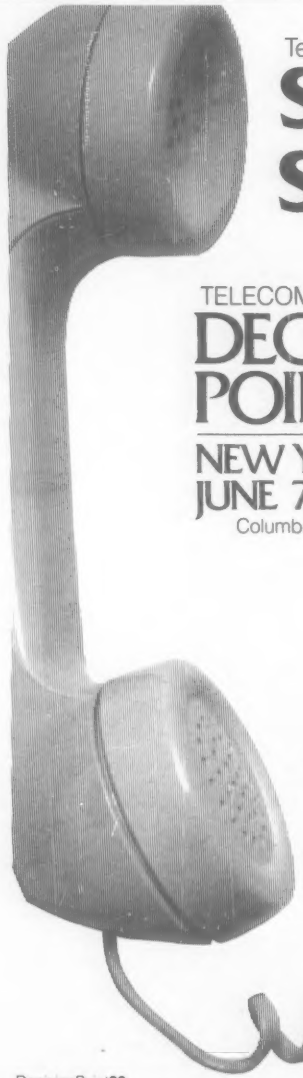
"Wang proved that its CRT screens could act quickly and correctly on our data base," he continued. "They also had a strong background on the techniques we were using with our new approach to software design."

Sensitive Areas

Steven Jacobson, manager of DP at Chance Manufacturing, joined the company in 1973 to oversee the conversion from batch mode to a full-scale interactive operation. His satisfaction with the Wang system carries over to the occasionally sensitive area of DP service and support, he said.

Jacobson said the Wang system paid for itself in about 18 months. The company had been going through some 30,000 nonamortizable dollars each year to obtain batch processing from the service bureau before the decision was made to spend a flat $50,000 to purchase the Wang system, which is now running about 16 hours per day.

Chance Manufacturing uses the system now to access some 65,000 items of on-line inventory, about 4,000 work orders, records covering some 1,200 customers and 1,500 vendors and payroll records for its nearly 200 employees.



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Journal Covers Computer Law

LOS ANGELES — The Center for Computer/Law has announced publication of its third annual "Computer/Law Journal."

The journal contains articles on trade secret and patent protection for computer software, the liability of architects and engineers in the computer age and computer acquisitions, according to a center spokesman.

The trade secret article covers protection in the areas of mass marketing and employment situations, and the patent article analyzes all software-related patent decisions to date. A third article discusses the potential losses from negligence and misuse of computer technology faced by architects and engineers. The last two articles discuss the negotiation and procurement of major computer systems and the issue of vendor fraud, the spokesman said.

The journal can be purchased for $18 ($19 outside North America) through the Center for Computer/Law, Box 54308 T.A., Los Angeles, Calif. 90054.

System Helps University Solve Growing Memory, Access Needs

EAU CLAIRE, Wis. — Problems at the University of Wisconsin's new computer center are only academic.

That's because the computer center and its new system were designed to serve the needs of a growing population of professors and students seeking access time.

Prior to late 1980, gaining access was no easy task. The computer service needs of both academic and administrative departments were served by a single computing center, according to Michael Yohe, director of academic computing. However, increased demand from academic departments created the need for a center dedicated to the instructional side of the university, complete with greater range, capacity and memory, he added.

To meet this demand, Yohe first had to analyze current and anticipated computing needs and equipment by determining who actually used the equipment and for what purposes. A survey showed that the business school and the computer science department were responsible for more than 85% of the existing system's use.

Also, the survey uncovered other departments that wanted more computer access in general and a text processing capability in particular, which the existing system lacked. Greater time-sharing and memory capacities were needed as well, as the university's needs had outstripped the system's capabilities.

Six Proposals

Yohe solicited and received six proposals for replacement systems. Each was evaluated against technical capabilities, benchmark tests and cost. After the results were tabulated, Honeywell, Inc. emerged as the best choice based on its time-sharing support and adaptability, according to Yohe.

The university purchased a Honeywell DPS 8/20 host computer with 512K bytes of memory, which runs under the Gcos III operating system, to anchor the academic computing center. The center went on-line in July 1980. With the system, Yohe said, time-sharing capacity increased by more than four times the previous level under the old shared system.

The academic computing system is accessed by about 100 CRT terminals at various locations including departmental offices and nine dormitories.

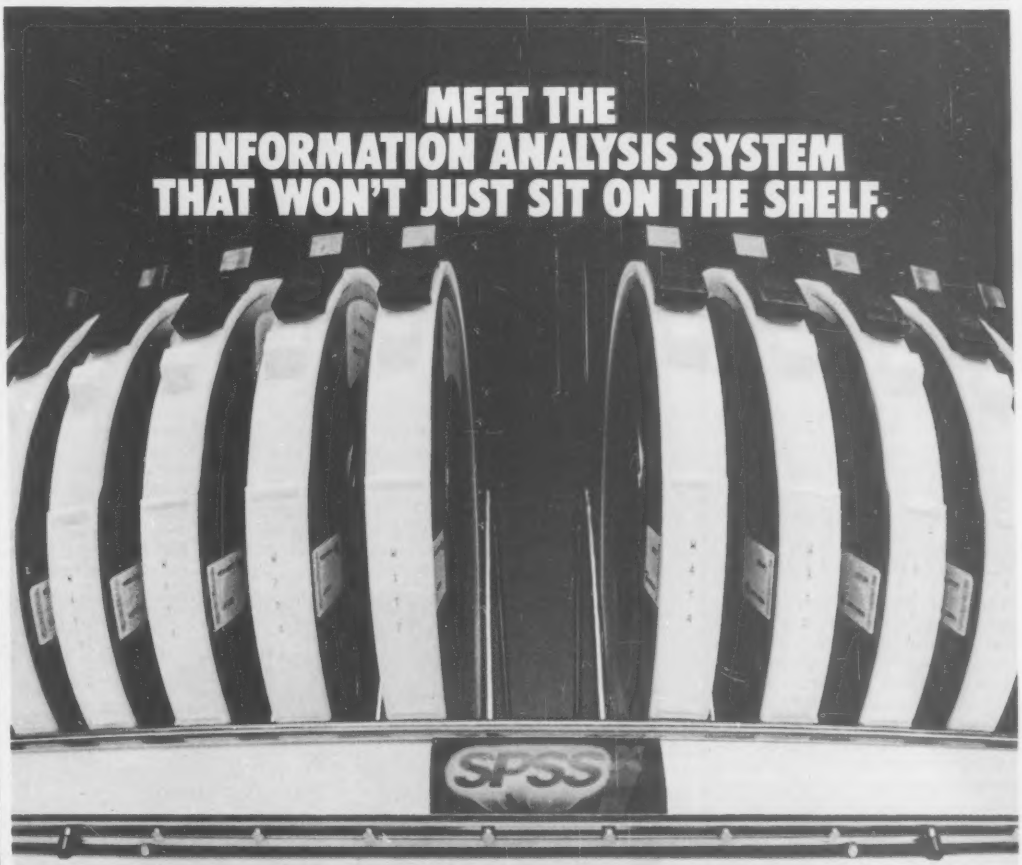
In addition to text processing, statistical analysis, scientific research, computer science and data processing courses, the system provides computer resources to a variety of university curricula.

About 50% of the school's 11,000 students will use the academic computing center during their college careers, nearly 30% during an average semester, John Beck, systems/software manager, said.

Another system plus is its built-in flexibility, Beck said. "The system provides good flexibility for upgrades," he said. "During the next three years, we'll probably have to upgrade our processing capabilities either by adding a second processor or by moving to a new one." So far, the center has had to double the system's memory.

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Financial Tool Helps Publisher Streamline

MINNEAPOLIS — Sutton Industries, a California-based publisher of shoppers' and direct mail advertising materials, has turned to a software consulting firm here for a financial package the company claims has streamlined and improved the efficiency of its operations.

Before purchasing the accounting package for its newly purchased IBM System/38, which replaced a batch-oriented System/3, Sutton officials put together a list of requirements they wanted the software package to meet.

A partial list of those requirements included flexible report generation, on-line data entry, incorporation of multiple companies with multiple divisions into the general ledger system and, perhaps most importantly, data base management capabilities.

However, once they began their software search, Sutton officials began to realize the System/38-compatible packages available did not make use of the system's on-line, data base capabilities.

"In fact, we found that even IBM's own System/38 software didn't use all of the [system's] on-line data base management concepts," said Tony Distefano, accounting manager for Sutton.

After carefully examining all the contenders, Distefano said his firm decided to go with Lawson Associates' financial packages because they were developed specifically for the System/38 and, unlike most other packages the company was considering, did not have to be rewritten. The financial package includes programs for general ledger, accounts payable, payroll and fixed assets.

With the new hardware/software package, Distefano said his company's management team is receiving many more reports than it did using its old System/3. The company felt the System/3 had "limited report generation capabilities."

"We chose their software because Lawson has a good reputation with other users. We checked with several companies using the System/38 packages and found that they were pleased with the software and capabilities," Distefano explained.

While Sutton was in the process of examining the financial packages of several vendors, the company considered developing its own software. But when it found out how expensive it would be in terms of investing time and personnel, the company decided against it.

"We figured that it would take our entire 12-person data processing staff more than a year to develop the system in-house, not including the time needed to maintain our daily data processing operations," Lawson said. He felt his staff could better spend its time developing a "unique production system."

As the software began to streamline the company's business, Distefano said the new level of efficiency has brought about some unforeseen advantages. According to Distefano, the package has helped to reduce, by two to three days, the time to do month-end closings. Before, such information on the preceding month was not available until the middle of the following month.

The fact that Sutton and Lawson are almost 2,000 miles apart has not caused a communication problem, Distefano said. "Lawson's people have been out here six or seven times since we bought the software. And when we have called their support staff with questions or problems, they have been extremely responsive and helped us sort out problems quickly," he noted.

Series Targets Cullinet's IDMS

NAPERVILLE, Ill. — A multimedia training series for users of Cullinet Software, Inc.'s IDMS data base management system is available from Deltak, Inc. and DBMS, Inc.

The first subseries, "IDMS: Logical Data Base Design," considers logical design skills and is geared toward systems analysts, program designers and data base administrators.

The subseries includes the following courses: "Identifying Data," "Normalizing Data Structures" and "Finalizing Logical Design." The subseries is available for purchase or rental through Deltak's flexible Deltavision Library Plan.

Courses are available for an average rental of $50 to $125 per course, per month, depending on volume. Deltak is located at 1751 W. Diehl Road, Naperville, Ill. 60566.



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Case History #127

Appalachian State University

Appalachian State University is a school of 10,000 students in Boone, North Carolina. Until recently, its mountainous setting made good television almost impossible. This meant that instructors and students were denied access to concerts, plays, and other educationally useful programming on public television.

University administrators decided in 1979 that the time had come to do something about the problem. After a careful study, they invested in an Interactive Systems/3M Videodata® broadband network. Today, the university is benefiting from a system that combines the proven concept of cable television with high-density, two-way communications for such purposes as digital information, voice, and energy management as well as commercial and public TV, campus-originated programming, and training materials on film or videotape.

The IS/3M Videodata network incorporates more than 17 miles of ½-inch coaxial cable. A dual-trunk configuration was chosen to provide enough bandwidth for an unusually large number of future television channels. (Normally, one main cable would suffice for all types of communications, since frequency- and time-division multiplexing allow simultaneous two-way communications by thousands of devices. Appalachian State wanted the extra capacity because 35 TV channels

Captures Data From 21 Locations

POS Net Speeds Checkout for Resort's Guests

AMELIA ISLAND, Fla. — The last thing business travelers need at the end of a trip is a long wait at the hotel desk to settle their accounts.

Amelia Island Plantation, a 900-acre resort 29 miles northeast of Jacksonville, Fla., is trying to avoid this problem by using a network of terminals to capture transaction data from 21 scattered locations and post the charges to guest folios.

The system here also handles food and revenue accounting and gives a continuing analysis of how well each location of the resort is operating, according to the plantation's senior vice-president, Jack B. Healan Jr.

In selecting the resort's network, Healan evaluated 10 systems and decided that a processor-driven, point-of-sale (POS) terminal system best met his organization's needs. "I decided on a system design from the user's point of view," he explained. "I believe the result efficiently covers all the bases to run the business."

Operational System

The system was operational at Amelia Island Plantation by last June. NCR Corp. Model 2160 POS terminals communicate with the IBM mainframe that handles reservations and general accounting. IBM and NCR programmers worked to link the respective systems, and the interface program was put into operation within 12 hours and operated successfully.

A notable feature of the completed system is a cable hookup of the four central CPUs in the main office with the 21 terminals that are spread out over the 900-acre resort.

Healan explained that the four cable-runs to the four CPUs had to be buried to preserve the natural appearance of the resort: One branch even extends under highway A1A to the golf pro shop, and another extends 4,700 feet to the tennis center. A special, direct-burial cable was used. This continuously operating cable hookup is intended to save on monthly telephone charges.

Healan said the response time of this system is as rapid as if the CPU were directly beside each terminal. For example, as the order is entered by the waiter into the terminal at the restaurant counter, an automatic forms number reader electronically reads the number code printed on the guest check, and the order initiation is registered in the CPU at the front desk. The order also is reproduced on a printer in the kitchen and the cook refers to this printed record when preparing the order. When the guest settles his check, that check is posted immediately and automatically to the guest account at the front desk.

Self-Balancing System

Healan observed that the system saves time because the automatic forms number reader designed into it controls guest checks and makes the system self-balancing. It does the posting of guest checks without keystrokes and tells which tickets have not been settled and which checks the waitress is still accountable for. It also keeps time and attendance data on employees, as well as menu abstract and inventory accounting.

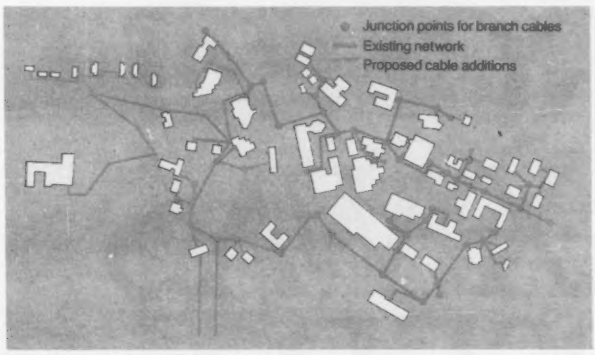
"We almost get a daily profit-and-loss statement on each restaurant," Healan added.

Healan estimated that the posting function alone saves 3½ people on the front desk operation. The system also allows inquiries on the current status of a guest account, without codes, with the use of a simple name identification.

"That's very important for waiters and waitresses. Their purpose is to serve guests, not answer a lot of computer questions," Healan said.

At the centrally located CPUs, a rotary switch allows the night auditor to monitor any one of the 21 POS locations in turn, reducing the time needed to balance the books at the end of the day.

While the system is presently functioning well, it did have problems when first installed. Most of these problems were blamed on the staff, who had to learn how to operate the system, Healan explained.



This diagram shows the existing campus-wide Videodata network at Appalachian State University. (For simplicity, the two parallel coaxial cable trunks are represented by a single line.) Proposed network extensions are also indicated, as are current and future junction points for branch cables that serve buildings or campus areas.



Richard Arnold, associate vice chancellor for business affairs, worked with university departments and IS/3M in planning Appalachian State's Videodata network.



Remote CRT terminals can be plugged into the Videodata network wherever a connection point exists. No rewiring is needed.

are already being used, and full-motion video requires far more bandwidth than other types of signals.)

The two cable trunks, which total 90,000 feet in length, run side by side and share ducts with the university's telephone and power networks. Access to cable taps and amplifiers is through manholes. Parallel branch cables run from the main network into buildings, where they terminate in cable jacks at convenient points for plug-in installation of modems and/or multiplexers for use with television sets, CRT terminals, and other devices.

Although the need for distributing video signals was a major reason for the network's installation, data communications are equally important. The school uses a large Univac 90/80 computer for administration and management DP as well as instructional use by the physics, mathematics, business education, history, political science and computer science departments. On-line terminals serve functions such as registration, accounting, student records, parking, and traffic control.

"We have nearly 150 remote CRT terminals in buildings outside our computer center," says Ernest L. Jones, director of computer and management service. "Most of them have been operating over leased telephone lines. With the coax system, we'll be able to serve these users more efficiently, with faster communications speeds and far faster installation time than we can get with our telephone connections." Jones adds that departmental mini- and microcomputers may also be linked to the mainframe via the IS/3M network in the near future.



The Videodata network currently offers 35 television channels for distribution of campus-produced programming as well as commercial and public TV.

Associate vice-chancellor Richard Arnold reports that the university is pleased with the network's performance to date. "Our broadband network is very straightforward and mechanically simple," he notes. "Its simplicity is especially remarkable when one considers its huge capacity. We're only beginning to learn how the Videodata network can increase efficiency and improve communications for both administrative and academic users. We're confident that broadband communications will serve our needs economically for many years to come."



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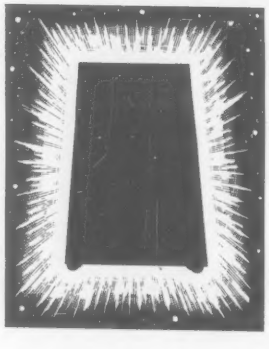
PHILADELPHIA — The International Association of Social Science Information Service and Technology (Iassist) will hold its annual conference here May 19-22.

Conference workshops will focus on microcomputer software systems for time series data, accessing large and complex data files and planning or integrating a data center in selected working environments.

A panel will discuss "Development of an Information Network for Locating and Describing Available Data and Programs."

Registration cost is $70 for Iassist members and $90 for nonmembers. More information is available through Iassist 83, c/o Gert Lewis, Rutgers University, CCIS Hill Center, Box 879, Piscataway, N.J. 08859.

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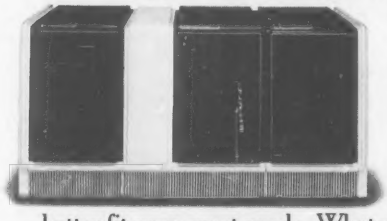
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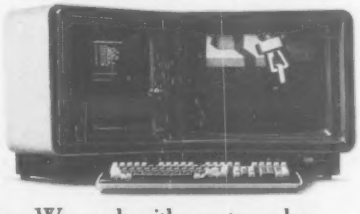
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*Sources include trade press articles, Digital literature, industry reporting publications and data supplied by industry reporting services.

Calendar

Week of March 27

March 28-29, New York — **DP for Key Users.** Contact: Ed Green, Executive Education Center, Peat, Marwick, Mitchell & Co., 810 Seventh Ave., New York, N.Y. 10019.

Week of April 10

April 10-13, Boston — **Computer-Based Training Conference.** Contact: Data Training, 176 Federal St., Boston, Mass. 02110.

April 11-13, Dallas — **SNA Architecture and Implementation.** Contact: Communications Solutions, Inc., 992 Saratoga-Sunnyvale Road, San Jose, Calif. 95129.

April 11-14, Philadelphia — **National Micrographics Association (NMA) 32nd Annual Conference & Exposition.** Contact: NMA, c/o First American Bank N.A., 740 15th St. N.W., Washington, D.C. 20005.

April 11-15, Washington, D.C. — **IMS/VS Data Base Design.** Contact: Data Base Management, Inc., 1075 Tolland Tnpk., Manchester, Conn. 06040.

April 11-15, Hartford, Conn. — **CICS Command Level Programming Language.** Contact: New England Data Services, P.O. Box 92, Guilford, Conn. 06437.

April 11-15, Washington, D.C. — **Systems Analysis & Design Workshop.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

April 11-22, Hartford, Conn. — **MVS System Fundamentals.** Contact: Amdahl Education Center, M/S 302, 1250 E. Arques Ave., Sunnyvale, Calif. 94086.

April 12-13, New York — **Executives in the Emerging Information Environment.** Contact: Conference Registrar, The Conference Board, 845 Third Ave., New York, N.Y. 10022.

April 12-13, Danvers, Mass. — **The New Technologies: Impacts on People.** Contact: Thomas Chase, The Organizational Development Network, 15 Garrison Ave., Durham, N.H. 03824.

April 12-13, Dayton, Ohio — **7th Annual Computer Fair.** Contact: Dan Schumacher, University of Dayton, 300 College Park Ave., Dayton, Ohio 45469.

April 12-14, Seattle — **Data Base Concepts and Systems.** Contact: QED Information Sciences, Inc., QED Plaza, P.O. Box 181, Wellesley, Mass. 02181.

April 12-14, Atlanta — **Data Communications Network Design & Optimization.** Contact: Registrar, Institute for Advanced Technology, 6003 Executive Blvd., Rockville, Md. 20852.

April 12-14, Oklahoma City, Okla. — **Southwest Computer Conference.** Contact: Southwest Computer Conference, P.O. Box 950, Norman, Okla. 73070.

April 12-14, San Diego — **Data Processing for Telecommunications.** Contact: DP Telecommunications Institute, University Extension X-001, University of California, San Diego, La Jolla, Calif. 92093.

April 12-15, Santa Clara, Calif. — **IMS/VS Installation Workshop.** Contact: Amdahl Education Center, M/S 302, 1250 E. Arques Ave., Sunnyvale, Calif. 94086.

April 12-15, Washington, D.C. — **Packet Switching for Modern Data Communications.** Contact: Continuing Engineering Education, George Washington University, Washington, D.C. 20052.

April 13-14, New York — **CICS and Vsam Technical Seminar.** Contact: Candle Corp., Suite 2404, 10880 Wilshire Blvd., Los Angeles, Calif. 90024.

April 14-15, Boston — **Artificial Intelligence.** Contact: Data Processing Management Association Conferences, Department A1, P.O. Box 3608, Torrance, Calif. 90510.

April 14-15, Andover, Mass. — **Computer Operations Management.** Contact: University of Lowell, Continuing Education, 1 University Ave., Lowell, Mass. 01854.

April 14-17, New York — **New York Computer Show & Software Exposition.** Contact: Northeast Expositions, 822 Boylston St., Chestnut Hill, Mass. 02167.

April 15-17, Anaheim, Calif. — **Applefest/Anaheim.** Contact: Northeast Expositions, 822 Boylston St., Chestnut Hill, Mass. 02167.

Week of April 17

April 18-19, Washington, D.C. — **Word Processing VII.** Contact: National Institute for Management Research, Department B, P.O. Box 3727, Santa Monica, Calif. 90403.

April 18-19, San Francisco — **Computer Crime.** Contact: Law & Business, Inc., Harcourt Brace Jovanovich, Inc., Publishers, 757 Third Ave., New York, N.Y. 10017.

April 18-19, Los Angeles — **Software Engineering Economics.** Contact: Data Processing Management Association, Education Foundation, Department SEE, P.O. Box 3608, Torrance, Calif. 90510.

April 18-19, Washington, D.C. — **How to Manage Data and Information as a Resource.** Contact: Barnett Data Systems, Inc., 19 Orchard Way N., Rockville, Md. 10854.

April 18-20, Summit, N.J. — **IMS Data Base Access DL/1.** Contact: Chubb Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

April 18-20, Columbus, Ohio — **DOS/VSE Performance Measurement and Tuning.** Contact: Goal Sys-

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Calendar

tems International, Inc., 5455 N. High St., Columbus, Ohio 43214.

April 18-20, Los Angeles — **X.25 and Other Protocols for Long-Haul and Local-Area Networks.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

April 18-20, Washington, D.C. — **SNA.** Contact: Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90402.

April 18-20, Washington, D.C. — **DP Disaster Recovery Seminar.** Contact: EDP Security, 181 West St., Waltham, Mass. 02154.

April 18-21, Boulder, Colo. — **Vsam Programming and Structures.** Contact: The Seminar Broker, 3212 W. 133 Ave., Broomfield, Colo. 80020.

April 18-21, New Orleans — **1983 International Conference on Computer Capacity Management.** Contact: Institute for Software Engineering, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

April 18-21, New York — **Vsam Structure and Programming.** Contact: Telecommunications Technology Corp., 548 Fifth Ave., New York, N.Y. 10036.

April 18-22, Washington, D.C. — **C Programming: A Hands-On Workshop.** Contact: Donald D. French, Institute for Advanced Professional Studies, 55 Wheeler St., Cambridge, Mass. 02138.

April 18-22, Washington, D.C. — **Advances in Electronics Technology II.** Contact: Continuing Engineering Education, George Washington University, Washington, D.C. 20052.

April 18-22, Chicago — **Data Base Concepts and Design.** Contact: American Management Association, 135 W. 50th St., New York, N.Y. 10020.

April 18-22, New York — **Vsam.** Contact: Sysed, 1 Park Ave., New York, N.Y. 10016.

April 18-22, Las Vegas — **Auditing in the Contemporary Computer Environment.** Contact: Marge Umlor, EDP Auditors Foundation, 373 S. Schmale Road, Carol Stream, Ill. 60187.

April 18-22, Las Vegas — **Auditing Integrity Controls in the Contemporary Computer Environment.** Contact: Marge Umlor, EDP Auditors Foundation, 373 S. Schmale Road, Carol Stream, Ill. 60187.

April 18-22, Sacramento, Calif. — **Structured Systems Design/Structured Program Design.** Contact: Gayle Giescke, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

April 18-29, Santa Clara, Calif. — **MVS Structure and Flow.** Contact: Amdahl Education Center, M/S 302, 1250 E. Arques Ave., Sunnyvale, Calif. 94086.

April 19-21, Washington, D.C. — **Local-Area Networks.** Contact: Technology Concepts, Inc., 730 Boston Post Road, Sudbury, Mass. 01776.

April 19-21, New York — **Electro '83.** Contact: Electro, P.O. Box 92275, Los Angeles, Calif. 90009.

April 19-22, Washington, D.C. — **Introduction to Adabas/Programming With Natural.** Contact: Registrar, Applied Technology Associates, Inc., Suite 1418, 1710 Goodridge Drive, McLean, Va. 22102.

April 19-22, Washington, D.C. — **Hands-On Unix Workshop.** Contact: Ruth Dordick, Integrated Computer Systems, 3304 Pico Blvd., P.O. Box 5339, Santa Monica, Calif. 90405.

April 20-21, New York — **Integrating PBXs and Office Systems.** Contact: Probe Research, Inc., P.O. Box 590, Morristown, N.J. 07960.

April 20-21, New York — **How to Program Computers in Basic.** Contact: Executive Enterprises, Inc., 33 W. 60th St., New York, N.Y. 10023.

April 20-22, Washington, D.C. — **How to Build and Use a Data and Information Resource Directory.** Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

April 20-22, Houston — **Teleprocessing Fundamentals.** Contact: Amdahl Education Center, M/S 302, 1250 E. Arques Ave., Sunnyvale, Calif. 94066.

April 20-22, Chicago — **Financial Information Systems — The New Generation.** Contact: National Institute for Management Research Seminars, Department PR, P.O. Box 3727, Santa Monica, Calif. 90403.

April 20-22, Houston — **Performance Analysis and Capacity Planning Concepts and Tools for VAX/VMS Systems Seminar.** Contact: Raxco, Inc., Suite 200, 6520 Powers Ferry Road, Atlanta, Ga. 30339.

April 20-22, Hampton, Va. — **Symposium on Computer-Aided Geometry Modeling.** Contact: John Shoosmith, Mail Stop 125, National Aeronautics and Space Administration Langley Research Center, Hampton, Va. 23665.

April 20-23, Chicago — **Future/Interact Convention.** Contact: Management Science America, Inc., Suite 1300, 3445 Peachtree Road N.E., Atlanta, Ga. 30326.

April 21, Columbus, Ohio — **DOS/VSE Shared Direct Access Storage Device.** Contact: Goal Systems International, Inc., 5455 N. High St., Columbus, Ohio 43214.

April 21, San Francisco — **Computer Law for the Purchaser.** Contact: Business and Management, Department 468NB, University of California Extension, 2223 Fulton St., Berkeley, Calif. 94720.

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EDITORIAL

An Uneasy Silence

The electronics industry has mounted a phenomenally successful lobbying blitzkrieg to persuade the White House and Congress that this country's high-technology superiority is slipping away under concerted attack from Japan and Western Europe. The recent Commerce Department report to the White House supported the complaints of U.S. high-tech firms about their declining competitiveness in domestic and international markets [CW, March 21].

Unfortunately, the industry has failed to offer an agenda for countering this high-tech challenge. For example, the Semiconductor Industry Association (SIA), currently the most vocal of industry groups petitioning the government, recently issued a detailed account of the effect on U.S. chip makers of Japanese government actions to protect and support — in SIA's estimation, unfairly and, in some cases, illegally — its native semiconductor industry [CW, Feb. 14]. But the association declined to suggest how the government should respond.

Perhaps the industry is silent because, like the government, it does not know what to do. There have been suggestions aplenty — antitrust immunity in joint research and development ventures, favorable stock option plans, extension of R&D tax credits, streamlined export license processing — but not for anything that would match the crisis the industry says it faces in trying to compete with Japan.

Or perhaps the industry is silent because it senses, correctly, that the mood in Congress is not completely one of sympathy. For instance, the industry must realize that in the Democrat-controlled House, the thinking of Speaker Thomas P. O'Neill (D-Mass.) and his ideological fellow travelers is that when it comes to handing out government assistance to hard-pressed industries, the electronics sector will have to stand in line behind autos, textiles and steel.

More likely, however, the electronics industry is silent because it fears government assistance will mean increased government interference. Historically, that assistance has all too frequently come out looking distressingly similar to regulation — the last thing a growing, generally healthy industry wants.

The time is right for making some hard decisions in corporate boardrooms and government agencies. The vision of a high-tech future has already been tarnished by the realization that it will be years — if ever — before high-tech companies can create more jobs than their products and services displace.

If the competitive crisis is as great as the industry maintains, there is no time to waste. A resurgent economy worldwide could obviate the need for any government action, but who can count on that? In any case, the industry must realize it now has the attention of the government to an almost unprecedented extent. But in the fast moving world of politics and economic developments, the attention span is notoriously short.

DATA PAST

Five Years Ago
March 27, 1978

WHITE PLAINS, N.Y. — IBM shipped the first models of its 30 series processor a full two weeks before its own deadline for first shipments. The Singer Co. of Wayne, N.J., received the first 3033.

Ten Years Ago
March 28, 1973

WASHINGTON, D.C. — Western Union Telegraph Co. proposed new rates for its planned domestic satellite system. The domestic satellite system could cut user rates by more than 50%.



'Come on, hit me — I dare ya!'

LETTERS

Meeting Halfway

Thomas M. Nies, president of Cincom Systems, Inc., predicts the extinction of the programmer in the article "Programmer Extinction Predicted" [CW, Feb. 14]. The same prediction has been made many times in the past, and programmer extinction has not yet occurred. On the contrary, the programmer will not become extinct now or in the foreseeable future.

Yes, most shops have a large backlog of work and many users are dissatisfied with their systems. But what are the fundamental causes of these problems?

Most automated systems are simply computerized versions of the manual systems they replaced. The human brain is a remarkably flexible instrument and can deal fairly well with incomplete instructions.

Computers, on the other hand, require complete and explicit directions that are quite often lacking in manual systems.

The delays in many projects are a result of the added complexity introduced when conditions are discovered that were either not addressed in the manual system or were being handled incorrectly.

How many times have you had this experience during the development of a system: A user department manager, upon hearing what his own people have been doing, says "What? They're doing that? That isn't right!"

Many departmental operations are simply a collection of ad hoc procedures that lack any systematic continuity.

But try suggesting to a user that the system would be simpler, easier to use and more accurate if some of the procedures in the user's department were revised. You might as well clean out your desk and update your resume, because you will be persona non grata from then on.

The sanctity and accuracy of manual systems are facades that are revealed when one attempts to computerize the systems. As a consequence, data processing is stuck with overly complex, difficult-to-maintain systems that mirror the lack of efficiency in the user departments.

The true value of a good programmer lies in his ability to approach a problem logically, methodically and thoroughly.

This ability is not something that everyone has, and transferring the programming task to the user departments will soon make that abundantly clear. However, the price of that lesson will be incredibly high.

Rather than attempting to eliminate the data processing department, the users should make use of these people's abilities to streamline their operations, with an eye toward more extensive and effective computerization.

The DP staff, on the other hand, must stop intimidating the users with buzzwords and technological mysticism and learn more about the applications environments with which they must deal.

By meeting each other halfway, we can make all our jobs easier, more satisfying individually and more productive for our organizations.

Gordon S. Glasgow
Kirkland, Wash.

Computerworld welcomes comments from its readers. Preference will be given to typed, double-spaced letters of 150 words or less. Letters may be edited for purposes of brevity and clarity. Letters should be addressed to Editor, *Computerworld*, 375 Cochituate Road, P.O. Box 880, Framingham, Mass. 01701.

SOFTLINE / Werner L. Frank‡

Australia: A Test Market for Japanese Micros

Australia has been described as a test market for Japanese export-directed hardware and software. A recent visit down under gave me the opportunity to investigate this phenomenon.

My attention was attracted by a full-page advertisement appearing in the Australian general press, promoting the availability of the Panasonic Co. JB3000 Personal Computer. Along with other claims, six points were emphasized:

- Sixteen-bit technology with memory expandable to 256K bytes.
- External storage, including either 5¼-in. or 8-in. diskettes.
- Eight-color, high-resolution graphics.
- Software compatibility with the IBM Personal Computer.
- Availability of general introductory training courses, including support of locally produced accounting packages.
- Distribution by leading retailers.

JB3000 (In Australia)

Two Diskettes	Video	
	Monochrome	Color
5¼ in.	$5,578	$6,789
8 in.	$7,435	$8,551

Price of Panasonic Co.'s Personal Computer

Well-Planned Introduction

It appears that this introduction from Panasonic was well and purposefully planned. The last two points are especially worth noting since they are not usually included in U.S.-based promotions. Five accounting application modules are offered, ranging in price from the Invoicing Sales Analysis package at $418 to Accounts Receivable, Inventory Control, General Ledger and Accounts Payable at $790 each. All six modules can be obtained for $3,100, a 15% savings. The source of the software is a local Australian supplier, Attache Software Pty. Ltd.

A notable point of departure from American practice is the arrangement made with Australia's leading business colleges to provide a full range of training courses in support of this software, as well as an introduction to personal computing.

The education works like this: When purchasing a system, the buyer receives vouchers good for 7½ hours of training at selected institutions. Additional vouchers can be purchased at $25/hour. This is an intelligent way to achieve a satisfied clientele.

Extraordinary Sales Technique

Another extraordinary sales technique is the deployment of retail outlets for the marketing distribution scheme. Identified in the ad were two prominent merchants — a department store enterprise and Australia's largest chain of conventional bookstores — attracting walk-in business.

The bookstore chain has introduced the new concept of the Business Center, an area in the store that is set aside to cater to businessmen, where the JB3000 is called a "personal business computer" rather than the more conventional "personal computer."

Intrigued, I strode off to view firsthand what is likely to be in store for us in the U.S. I chose one of the bookstore outlets and arrived unannounced and unidentified. My experience was a repetition of earlier ones in Los Angeles when computer stores first began operations there.

First of all, the computer system on display was running a noninterruptible canned demonstration showing off, of course, the colored graphics. The system and application were not yet operable by the sales staff. The store was only able to provide a single, four-page leaflet with system highlights. The manuals and reference material, the salesman said, would be forthcoming.

The clerk, a recent computer science graduate with no micro experience, was extremely courteous. I was never asked to identify myself, nor questioned about my needs or objectives in visiting the store. I was clearly a few months too early in pursuit of any operational experience, documentation or technical details.

Left Something to Be Desired

It was possible to view the hardware and see the color graphics in action. The overall packaging left something to be desired. Aesthetically, it does not compare with systems that were introduced into the American market during the past two years, although the sales pitch stresses the low-profile keyboard and the introduction of green-colored keys. Eight function keys are available for upper-shift and lower-shift operation, as well as 18 dedicated keys for purposes of cursor control, local edit and control.

The promotional literature actually pictured the slightly different Japanese keyboard rather than the keyboard offered for western communities. In fact, on display at the Business Center was one such Japanese keyboard, Kanji characters included, marked by the label My Brain 3000, the name by which the system is known and sold within Japan.

Placement of the function keys along the top of the keyboard is an improvement over the comparable IBM device since it affords space for the placement of a labeling strip. However, connecting the separated keyboard coiled cable to the back of the logic unit replicates a poor design.

The packaging is also affected adversely by the treatment of diskette drives. These are housed separately, probably because both 5¼-in. and 8-in. units are mixable options, and this creates a more cluttered look. The 5¼-in. diskettes have a capacity of 160K bytes, which will soon be increased to 320K bytes and then to 640K bytes. The 8-in. system is already at full capacity, counting 1.2M bytes per drive.

The CPU is Intel Corp.'s 8088, operating at 4.77 MHz. Standard memory consists of 16K bytes of read-only memory used for the Bios and 128K bytes of random-access memory expandable by another 128K bytes. However, 32K bytes of the base memory are dedicated to handling the video display so that users only have from 96K bytes to a maximum of 224K bytes for their applications.

At first glance, one would conclude that there is a deficiency in the limited three on-board slots. Fortu-

(Continued on Page 59)

HUMAN CONNECTION / Jack Stone‡

Not All DP Resisters Are Cyberphobiacs

Harold and Elizabeth Guarnieri's article, "The Psycho-Computer Syndrome" in *Computerworld Extra!*, Nov. 17, 1982, correctly states that "many capable and intelligent workers are resisting easy-to-use systems." But the article leaves the reader with the wrong impression that such resistance is based solely on cyberphobia, the fear of computers.

No doubt there are plenty of fears in the new user camps. Most office personnel in both supervisory and employee capacities exhibit a whole slew of concerns and apprehensions when facing the prospect of their first computer terminals or, as the article states, "fear them on an emotional basis."

But the bulk of their fears is derived from rational, short-range anxieties that would be expected from perfectly normal people who are about to face a totally new business environment — one filled with the potential for opportunity and growth, as well as personal and professional challenges.

Such fears do not lead to the situation that is reported in Case Study 2 of the article, a rare situation in which a user was so upset about a new terminal that she vomited all over it.

This is the third article in a series, "DPers and the Psycho-Computer Syndrome," coauthored with Joanne Barker.

Limited Population

This is not to deny the presence of a small number of true cyberphobiacs whose responses are irrational and who suffer intolerable pressures when they hear "the machines are coming." On the other hand, one should not forget another limited population that, in spite of having no computer experience whatsoever, greets new terminals with enthusiasm and joy.

We can apply the same logic used in the article to the case of computer center personnel who find themselves developing a system for a particularly primordial set of new users.

Often DPers in this predicament are not immune to psychological pressures, ranging from the superficial to the severe, which derive from:

- Grave doubts that terminal operators have the intellect to assimilate even the most elementary keyboard functions.
- A wrenching pessimism that systems acceptance will never take place.
- Dark and lurid thoughts about how management will unfairly blame yet another systems failure on the data processing department.

'Psycho-Human Syndrome'

Next, perhaps, I should ask these questions: "Should such DPers be classified as 'anthropophobiacs?'" "Would we expect them to vent their hostilities by garroting managers of the user department?" "Can we organize DP reactions in such cases into a set of Psycho-Human Syndrome stages, which can be readily identified by the users and employed to improve DP/user relations?"

The authors are on the mark when they state that each staff member reacts to a pending installation according to what he perceives he is getting or losing in the deal.

But the authors skirt the legitimate concerns of user personnel on the quality of the systems and follow-on systems support when they note "How quickly [a staff member] passes through each stage [of the Psycho-Computer Syndrome] ... also depends upon the reliability and complexity of the system he is learning to use."

If a system and/or its associated support does not fill the bill with respect to reliability and/or other key technical specs, the problem does not have to do with the psychology underlying systems acceptance by new users. Rather, it has to do with the quality of the technical work by the DPers and the effectiveness of their communications in keeping users abreast of developmental progress.

Letters to Stone should be addressed to him at Box 270, 1377 K St. N.W., Washington, D.C. 20005.

GETTING AHEAD IN DP

Presentation Preparation Builds Confidence;

Stage fright is not confined to actors. When we must make presentations to groups of people, many of us find that our palms begin to sweat, our hearts begin to pound and the room suddenly seems very warm.

The most effective way to keep yourself cool and confident is to prepare your presentation thoroughly.

The first question to ask when preparing a presentation is: "What's the purpose?" Is it strictly for purposes of providing information, such as a briefing, or will you be trying to convince someone to change an attitude, trying to sell an idea or position or trying to get a commitment to action? The latter types of presentations are more complicated than the informative presentation, so we will concentrate on them.

Audience Reaction

Before organizing any presentation, you must know what it is you want your audience to think and to do when you have finished.

The second step is to know your subject. You should anticipate all questions by knowing both the pros and cons of your subject.

You must be able to show the benefits of your proposal and its cost-effectiveness. If you are unable to answer sticky questions or if you cannot support your ideas with hard facts and figures, you will lose credibility, the audience will lose faith in your judgment and your proposal will probably go down the tubes.

Know Your Audience

The third most important step is to analyze your audience. The content of your presentation, the angle from which you make it, the style of your delivery and the kinds of audiovisuals you use all depend partly on who will be listening. Know the answers to these questions about your audience:

- How many people will be there?
- What is the age range?
- What is the male/female ratio?
- What are their backgrounds?
- Do they have any expectations or biases about DP that must be considered?
- Is company politics involved?

Chose anecdotes and examples that will not offend your audience's sex, intelligence or attitudes.

Set the time of your presentation carefully. Do not pick a bad time of day, such as late afternoon or the end of a long meeting. At these times, people might be too tired or restless to listen to you.

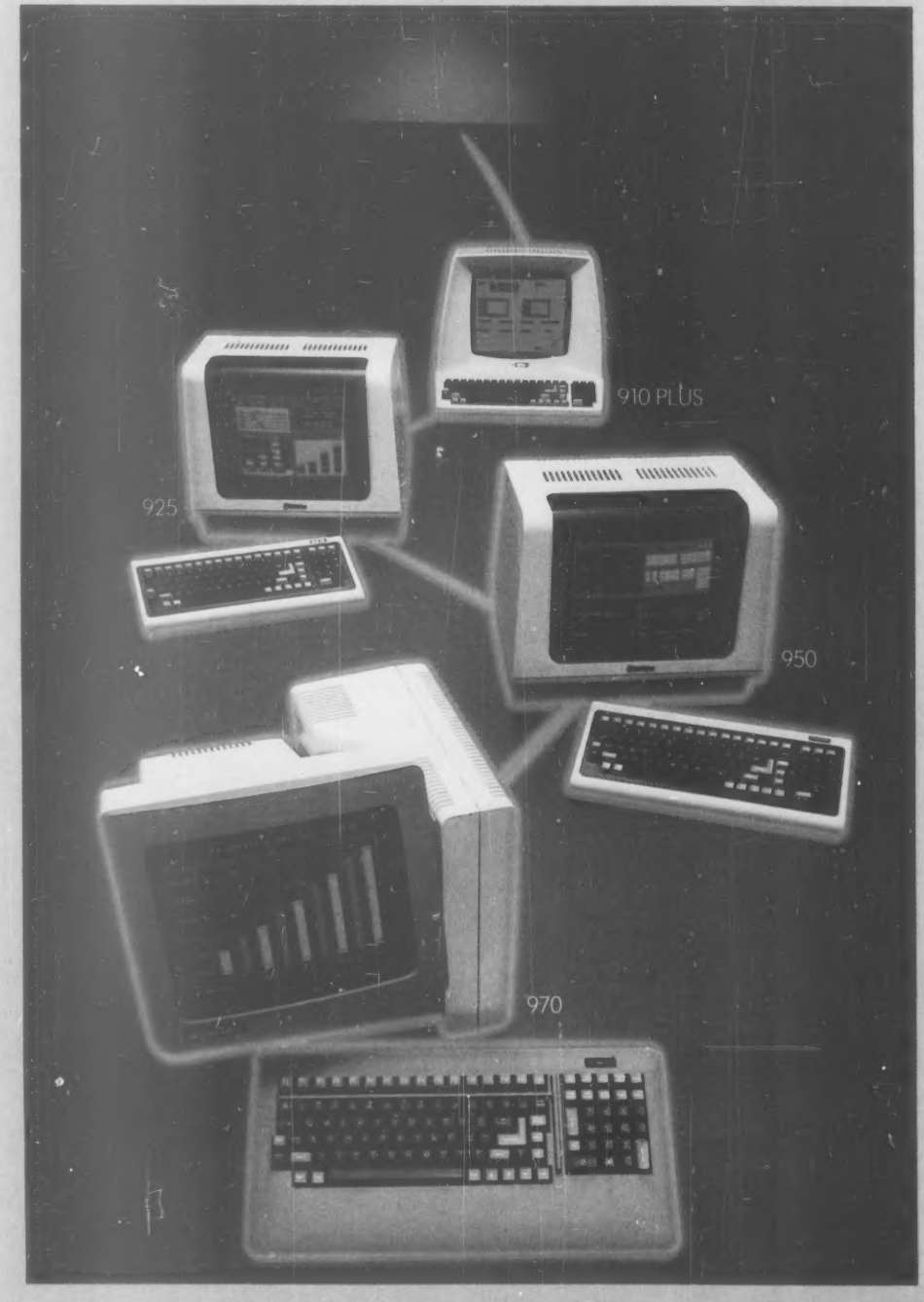
You should also choose the most convenient time for the most important people in your audience, the people who will make or break your proposal.

Visual Aids

Your choice of visual aids should complement the material you are presenting. It is a proven fact that the combination of images and words makes points more vivid and memorable.

Decide which media puts your message in the strongest light. You will probably want to choose from among handouts, charts, slides and videotapes. Each has its advantages.

If you use charts, be sure



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Donald J. Berardo‡

Know Your Subject, Audience and Practice

they are visible to everyone and easily manageable. If you use slides or videotapes, you will have to check their clarity, as well as the projector and screen you will be using.

Remember, these are aids, but they will stick out like sore thumbs if they are not smoothly and effectively integrated into your presentation.

Check Presentation Site

Next, check out the site of your presentation. What is the lighting like? Is there a lectern? Is there a sound system (if necessary)? Decide on a seating arrangement. If the seating arrangement is unalterable, note it and plan your charts and other aids accordingly.

You should also test the room's acoustics, and it is wise to note the temperature of the room so you will know how to dress most comfortably.

Finally, and most importantly, you must practice your presentation again and again. One school of thought recommends two hours of practice for every 20 minutes of stage time, while another recommends a minimum of eight practice run-throughs. You should go over your material until you know it well enough to look at the audience 85% of the time.

Once you have done all this, there is no guarantee that your palms will not sweat and your heart will not pound when you first face your audience. But you will feel prepared and in control once you get into your presentation.

Berardo is a management counselor and career therapist. He is a vice-president with the Meld Group in West Hartford, Conn., publishers of a monthly newsletter on management development.

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LETTERS

Selling Education

In *Computerworld*'s editorial "Talk Is Cheap" [CW, Feb. 7], President Reagan is cited as saying that institutions of higher learning would do well to be run more like businesses.

The editorial reply that "Such thinking constitutes a dangerous flight into free enterprise fantasy" can't go unchallenged. The only support offered for the statement is that education must perforce continue to be subsidized by the taxpayer.

The editorial ignores the facts: There is an inverse correlation between state-run education and its product, the graduate; the quality of education has declined as government has become more involved; and compared with private institutions, state universities have enormous undergraduate dropout rates.

This is money down the drain, and by advocating more government involvement, the editorial proposes throwing good money after bad.

The effects of the current system are insidious. Instead of striving to sell the best possible product, university administrations are devoting most of their time to the politics of greater subsidies, while faculty pursue research grants and publication. There is less incentive for all to get their money's worth when someone else (the taxpayer) is paying the freight. We are left with no incentive to teach and no incentive to learn.

Education is as much a commodity to be bought and sold as your own publication, which you are free to offer for consumption by the very same free enterprise system you so haughtily dismiss for other disciplines.

Gary Leclerc
Montreal, Que., Canada

LETTERS

Establishing Recognition

Computerworld's editorial on certification, "Buying Certification" [CW, Feb. 14], reminds me of the story of children spending hours on the beach building an enormous sand castle, when along comes the beach bully who in only a few seconds can destroy what took hours to construct carefully.

I found the editorial presented a highly distorted view of our certification program. The Data Entry Management Association (Dema) certification program has been in development for almost three years. More than 60 of our members have participated in constructing the study guide and the actual questions that will be used on the examination.

The entire process is now under review by a panel of college education professors to ensure that the questioning process will be fair and represent clearly the body of knowledge covered in the exam.

My exact quotation stated the following:

"Those taking the exam, initially, will be experienced data entry managers. After taking the day-and-a-half seminar, which covers the fundamentals of data entry management, anyone should be able to pass the test. It will not be designed to trick people, but only those with the experience and knowledge of the subject areas will be able to pass."

Anyone "should be able to pass the exam" doesn't mean that everyone will pass.

Our profession is worthy of the respect and trust of our fellow associates in the field of data processing. The certification program is an important way to establish this recognition.

Norman Bodek
President

Dema
Stamford, Conn.

Consider the Truth

I recognize and appreciate the value of the editorial "Buying Certification" [CW, Feb. 14]. It is unfortunate that some readers may misconstrue some of the remarks as a global indictment of DP certification programs. On behalf of those who have invested a great deal of time in the promotion of responsible professionalism through the Certificate in Data Processing (CDP) program, I wish to offer some observations.

First, the CDP cannot be purchased at any price. It is a registered service mark that can only be earned. Its use by anyone who has not been awarded the CDP by the Institute for Certification of Computer Professionals (ICCP) or by the Data Processing Management Association (DPMA) through 1973 is illegal.

Second, the CDP, in context with both education and testing, is a mature program with a 20-year history. Those who conceived and implemented the program did so in anticipation of future industry needs rather than in response to past or current perceptions.

Third, the CDP represents a body of knowledge rather than a collection of transient skills. Those who hold the CDP are contributors to rather than recipients of that body of knowledge. Furthermore, they are practitioners (working professionals) rather than drones.

Fourth, the need for "recertification" and/or "continuing" education is a presumption that has strong support among many active promoters — as well as critics — of the CDP. For such a presumption to be completely valid, it must be made in a vacuum.

Consider the truth: Practicing Certified Data Processers (those who have not left the profession) must maintain their knowledge and skills on a continuing basis in order to serve their employers and clients effectively, regardless of the availability of officially sanctioned educational or testing programs.

Nevertheless, there is acceptance of the philosophy of continuing education among most practicing industry professionals, regardless of whether or not they hold the CDP.

It is in the context of the concept of education that a considerable amount of effort is being expended. The DPMA's Education Foundation, its Special Interest Group for Certified Data Processers (SIG-CDP) and ICCP are addressing the special educational needs of both CDP candidates and those who hold the CDP.

SIG-CDP is developing a coordinated "Review Course for CDP Candidates," complete with text, presentation material, assigned work problems, "stress tests," review-course administration and instructor training. The package is targeted for availability in October 1983.

The second stage of educational program development is for those who hold the CDP. Although CDP continuing education has been "in the works" for some time, it is at a much lower priority than that of certification education. There are two primary reasons for this "back-burner" attitude:

- ICCP constituent societies have been presenting and sponsoring industry-specific educational programs for many years, and they are expected to continue this practice.
- The responsibility of the Certified Data Processer is to maintain informed about the services his employer or client requires. This usually means continued education in law, accounting, auditing, banking, insurance, manufacturing or

(Continued on Page 59)

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Australia: A Test Market for Japan's Micros

(Continued from Page 55)

nately, the CRT, printer and memory expansion connections do not require any of these positions. Also, an announced expansion unit is expected to provide an additional six-slot facility. The video can be either monochrome or color, the latter providing eight colors. The screen resolution is a satisfactory 640 by 400 pixel raster.

Turning to Software

Turning to the software, we find two operating systems announced — MS/DOS and Digital Research, Inc.'s CP/M 86.

Inquiry revealed, however, that only the former is presently available. CP/M is slated for early 1983.

In addition to the already mentioned training vouchers, both the MS/DOS operating system and Microsoft, Inc.'s spreadsheet package, Multiplan, are bundled in the JB3000 purchase price.

System Cost

This brings us to the cost of the system: for a 128K-byte memory unit, including an 80-col. dot matrix printer (see box on Page 55).

A similarly configured all-IBM Personal Computer system with comparable software retails in the U.S. at about 15% less.

This difference in price may be due to the premium that is usually charged on imported hardware in Australia. In the case of the JB3000 configuration, only one of the three slots will be used, whereas in the case of the IBM Personal Computer, three or four of the available five will now be taken, depending on options selected.

Claimed Compatibility

The item of most interest was the claimed compatibility with the IBM Personal Computer.

As suspected, the units are not plug-compatible. One cannot directly operate IBM Personal Computer-prepared diskettes with the JB3000. It is necessary to convert the diskette format of one system to be readable in the second. It can then be expected that MSDOS/Basic programs designed for IBM operation will execute on the Panasonic system.

This sort of veiled compatibility should be contrasted with true replacement, such as the American-made and American-offered Multi-Personal Computer from Columbia Data Products, Inc. or Corona Personal Computer from Corona Data Systems, Inc.

The JB3000 is only one example of what is being tried out by Japanese vendors in Australia; there are other systems, such as those of Hitachi Ltd. With this kind of start in Australia in 1981 and 1982, the Japanese should be ready to sweep into the U.S. in 1983.

Frank is an independent consultant and president of the W.L. Frank Computer Group located in Calabasas, Calif.

LETTERS

(Continued from Page 58)

wherever "service" applies.

The notion that the practicing Certified Data Processer should be periodically "recertified" is vacuous under present circumstances.

Robert R. Cromer
Education Director
DPMA SIG-CDP
Irving, Texas

Elevating Professionalism

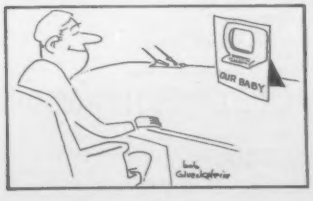
I read with great interest the editorial "Buying Certification" [CW, Feb. 14]. However, I found the headline misleading and false in its connotation. The Data Entry Management Association (Dema) certification program, like those offered by other professional organizations, cannot be bought. Without the background knowledge, acquired either through experience or educational courses, one would be unable to achieve certification.

The editorial states: "Professionals do not have a choice. It is imperative, particularly in technology-related fields, they keep current with rapidly changing technology in order to serve their users to the best of their ability. This is hat keeps professionals professional. And this is not possible without a minimally recognized level of knowledge in the field."

The preceding paragraph indicates clearly and precisely the purpose of the Certificate in Data Entry, which is to increase the level of knowledge in the field, thereby elevating the professionalism in the DP industry.

One has to agree totally with the closing sentence of the editorial, "Professionalism must be earned."

Barbara S. Bradley
Vice-President
Dema
Stamford, Conn.



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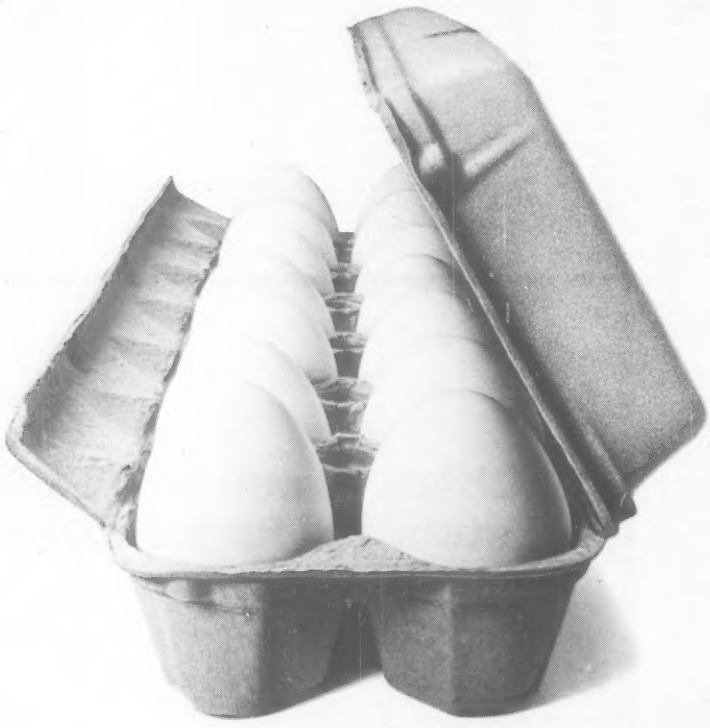
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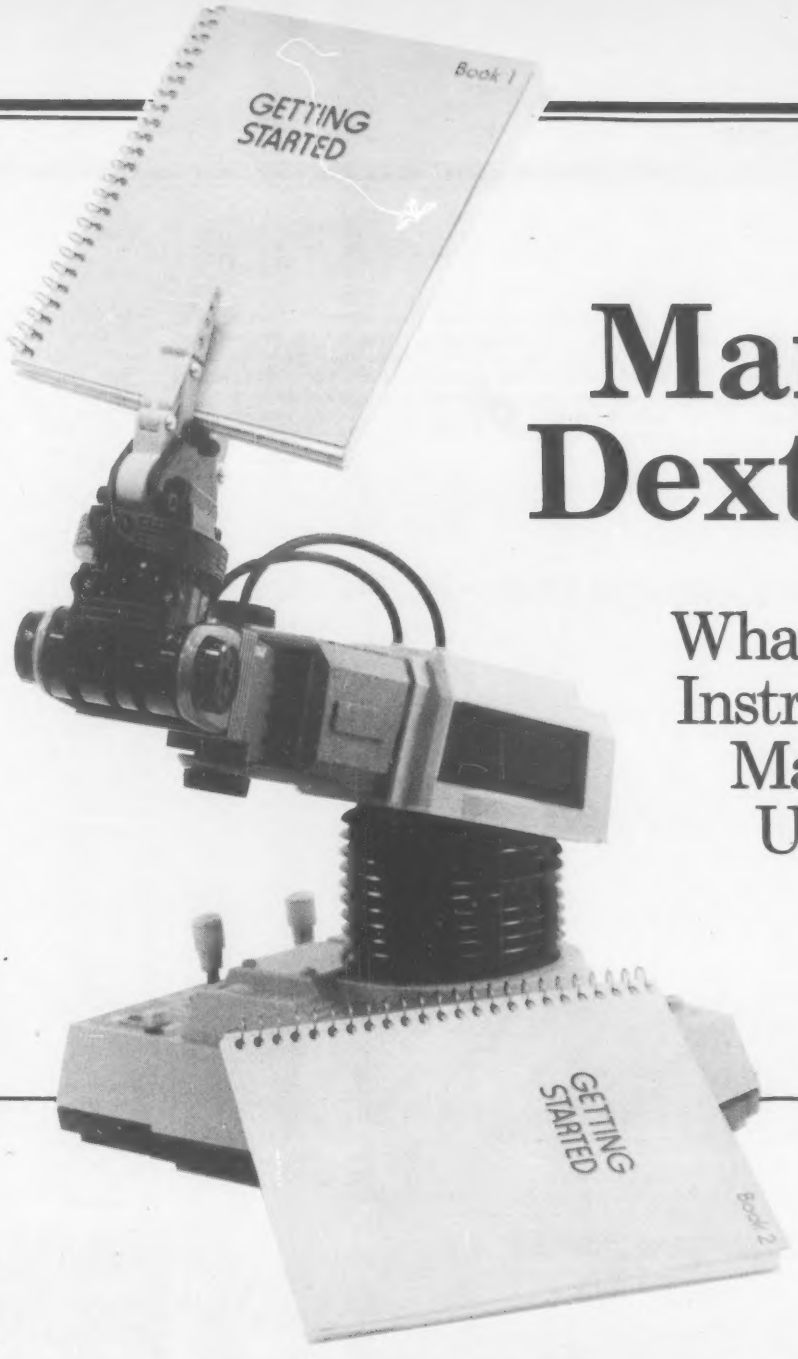


PHOTO BY KATHLEEN GOW

Manual Dexterity

What Makes Instructional Manuals Usable

By Joan Wackerman and Jim Gleason

Picture a woman returning to office work after a 25-year hiatus. She recalls her 20-page Smith Corona typewriter manual and then looks at her new word processor's manual, which is more than two inches thick. How much will it help her? In today's market, that manual must work not only for her, but for a variety of users with different word processing backgrounds.

If you are buying any kind of new equipment, of course you want manuals that explain how to use it for the jobs you want to do. How do you select a system that has a good manual?

Or, if you are a new product developer, how can you ensure that the documentation you develop is going to meet the users' requirements? How can you make sure that your manuals will be simple, easy to use and appropriate for your target market?

What distinguishes the best and most popular manuals from the ones that people toss into the corner and never look at? Consider the following:

Organization. Good manuals have a structured format, complete index, sections set off by tabs and a table of contents.

Content. The material is concise, focuses on operator tasks, contains practice exercises and provides clear illustrations.

Appearance. The presentation is attractive and colorful, contains plenty of white space and is "packaged" in booklets that are small and easy to handle.

Language. The text is conversational and easy to read, basically geared toward an eighth-grade reading level.

On the other hand, we have found that operators

IN DEPTH

do *not* like documentation that:

- Has too much information or detail.
- Has a demeaning or childish tone.
- Is formal, stiff-sounding or full of jargon.
- Has poor printing quality (broken type and so on).
- Is poorly organized, with the result that information is hard to access.
- Is inaccurate.

In seeking the right manual, first look for the most usable documentation available. That is, it must enable your users to do what they want to do with the equipment. This usually means two different kinds of documents need to be available: an operator guide (for training) and a reference manual. Also, you might want some sort of job aid, such as a quick reference card, to summarize keys, functions and possibly the most common procedures.

Why so many kinds of documents? First, the operators need a training manual to take them step-by-step through the equipment's uses. This kind of documentation needs practice exercises. On the other hand, the reference manual should be organized in a more traditional sense around system features and functions. As a rule, it should also provide a greater level of detail.

One recent trend that is becoming increasingly popular among equipment manufacturers is toward customer problem-solving and repair. In most cases, this means the manufacturer will provide some sort of problem determination guide and the operator will use it to isolate machine problems. On the positive side, this approach can significantly decrease system downtime for things like operator error. On the other hand, the guide itself may be difficult to use. The same criteria for usable manuals apply here — maybe more so, as these guides are usually very task-oriented and instructions must be followed exactly.

Further, if the operator is expected to repair some part of the machine, not only must the manual be explicit and usable, but the task must be practical. Check that the

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operator is not expected to do anything beyond his technical ability.

Keep Content Brief

How do companies keep manuals small and friendly when there are complex features to cover? One way is to divide one manual into separate booklets, based on different procedures or tasks. These booklets can be contained in one box or ringed binder and are similar to the reading kits available in the schools.

Another and perhaps better way is to ensure that the manual spells out only the content that the user needs to know to do his own tasks. For example, in word processor documentation, users will want to know how to put text on the machine, edit text and print it out. Certainly, the first portion of the manual must address only those issues. (Often the hardest battle for the author is preventing engineers from putting every detail about how the system operates in the manual.)

Users only want brief, boiled-down, step-by-step keystrokes for the operations they want to do. Thus, if you produce documentation, one way to keep your content slim is to identify the series of tasks your users will perform and then list the step-by-step procedures for doing those tasks on the equipment. Avoid covering all functions of the machine in an operator's manual. People will learn how to do many of the functions by experimentation. The place for detail is in the reference manual.

Practice exercises should be short and interspersed systematically throughout the structured format. They should be clear, procedural and should provide feedback to the operator as to what he did right or wrong.

Illustrations should be as simple as possible. Good technical artists know how to take a complex piece of equipment and represent it simply. Authors of good manuals use their artists' expertise (or ask for their ideas) to produce these simplified illustrations. Remember that the reason for having illustrations is to clarify an idea and to avoid using a large number of words to explain a concept.

All illustrations should reduce the number of words required and should stand alone — that is, they should make sense together with the caption and callouts.

The organizational structure

'Avoid covering all functions of the machine in an operator's manual. People will learn how to do many of the functions by experimentation. The place for detail is in the reference manual.'

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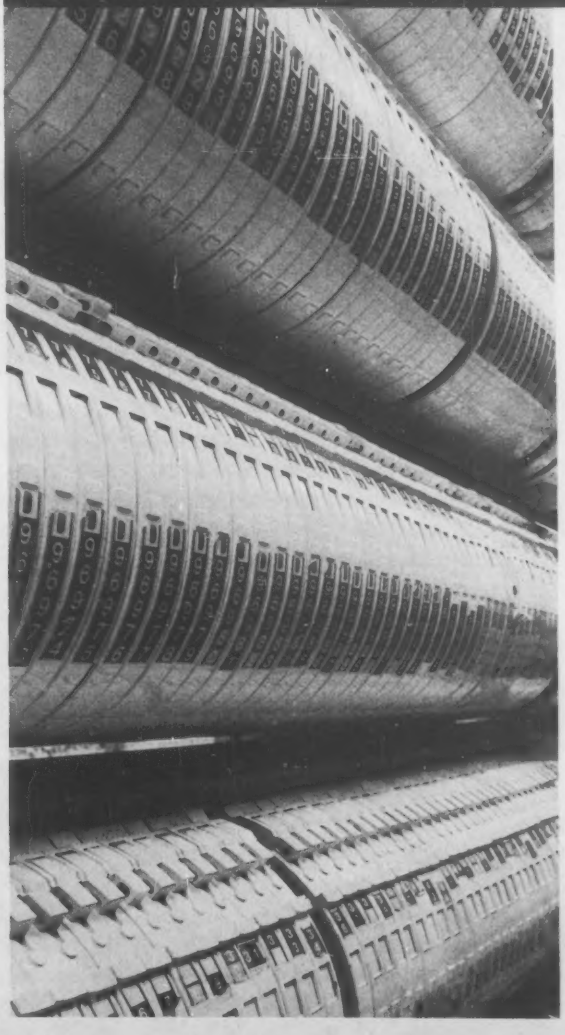
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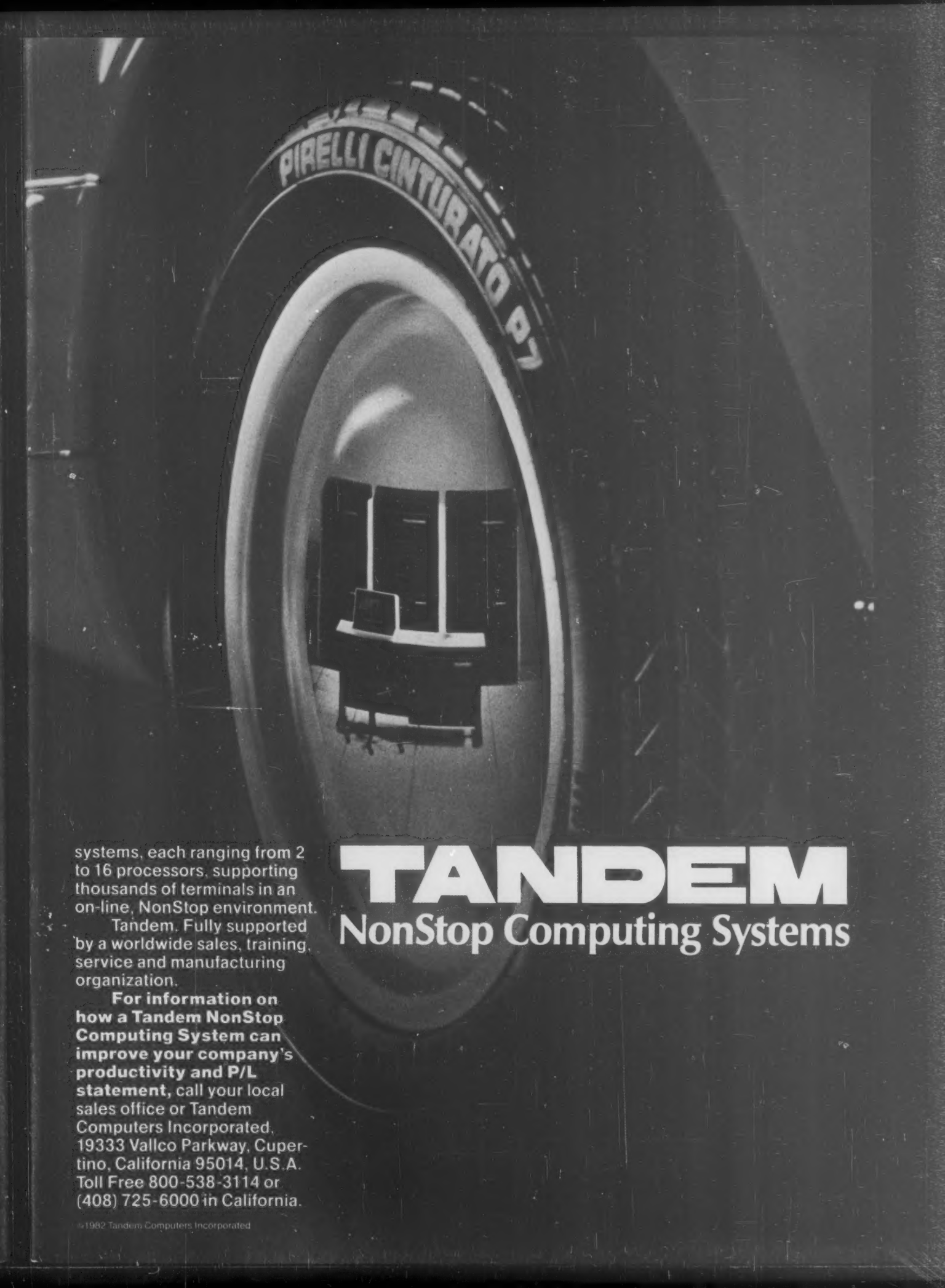
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IN DEPTH

should be very apparent to the user. The operator's manual should be sectioned off according to commonly performed tasks or the way people will use the equipment. This is in contrast to organizing by functions or what the machine can do — an approach more appropriate to organizing engineering materials. Where possible, the task sections should be separated by tabs. Further, these sections should be broken down into elements that are the same for each section. For example, you might want to have a preview, a brief system overview, the main content, practice exercises and then a review.

When producing documentation, a structured format forces you as a writer (or your writers, if you are a manager) to provide only information that fits the format. This prevents rambling, unnecessary content and excessive detail. Further, users *like* a structured format. It makes them feel comfortable — and they can skip sections they know they won't need.

'A structured format forces you as a writer (or your writers, if you are a manager) to provide only information that fits the format. This prevents rambling, unnecessary content and excessive detail.'

Once they work through a few sections and know what to expect under each kind of heading, they can successfully skim for the information they need. And whether we like it or not, users will skim and will also skip sections. That's the way people use manuals; they are often impatient to do something and need information quickly. For this reason, it is important that a manual remain somewhat modular — especially for equipment with many and diverse functions. Every user will not use every function.

The index must be complete and must be approached from various directions: features of the machine, functions of the keys, tasks the operator wants to do and so on. Users must be able to find information for a variety of reasons. The most popular documents let a user quickly find the page he needs.

Appropriate Language

It is fairly well known that jargon should be avoided in technical documentation. Terms must be as simple as possible, and their use must be consistent; the reader should not find a variety of terms for the same concept. Further, when a successful writer introduces a new term in context, he tries to tie it to something concrete that the user already knows. For example, the writer contrasts the way a particular key on a word processor works with a similar key on a typewriter.

There is some new documentation on the market now that attempts to be conversational, but ends up being demeaning. It is not easy to write a readable document that is not patronizing — that is, uses childish language, or tells the customer to do something that sounds too elementary. For example, several users recently complained that in a particular operator's manual, the text told them they were "doing a great job and they should take a break." The users found this somewhat presumptuous and resented it.

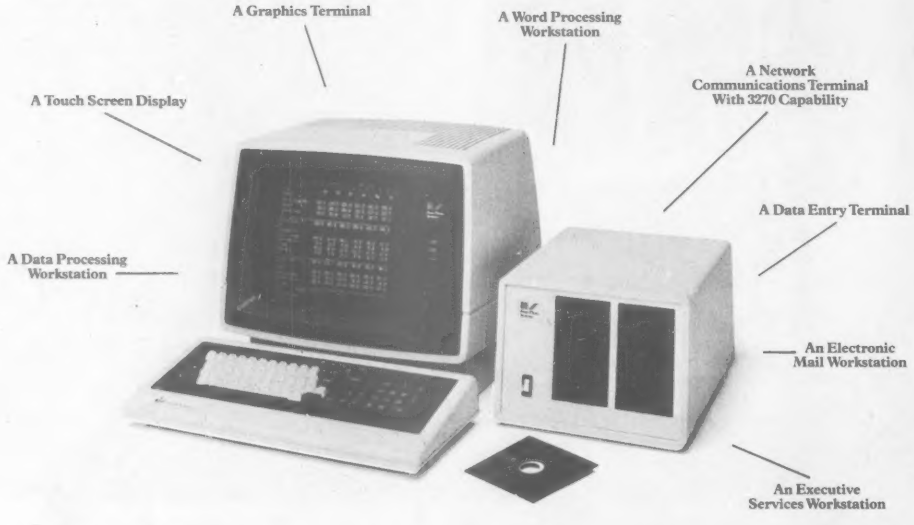
A good rule of thumb is to read the manual out loud. If you feel it sounds patronizing or demeaning, others probably will too.

Managing Development

If you are managing the writing or development process, you need to do several critical things to turn out a set of documents that really work.

First and foremost, you need to ensure that the materials are tested, tested and retested. Do not allow your writers or yourself to become ego-involved with the manuals to the extent that you cannot change

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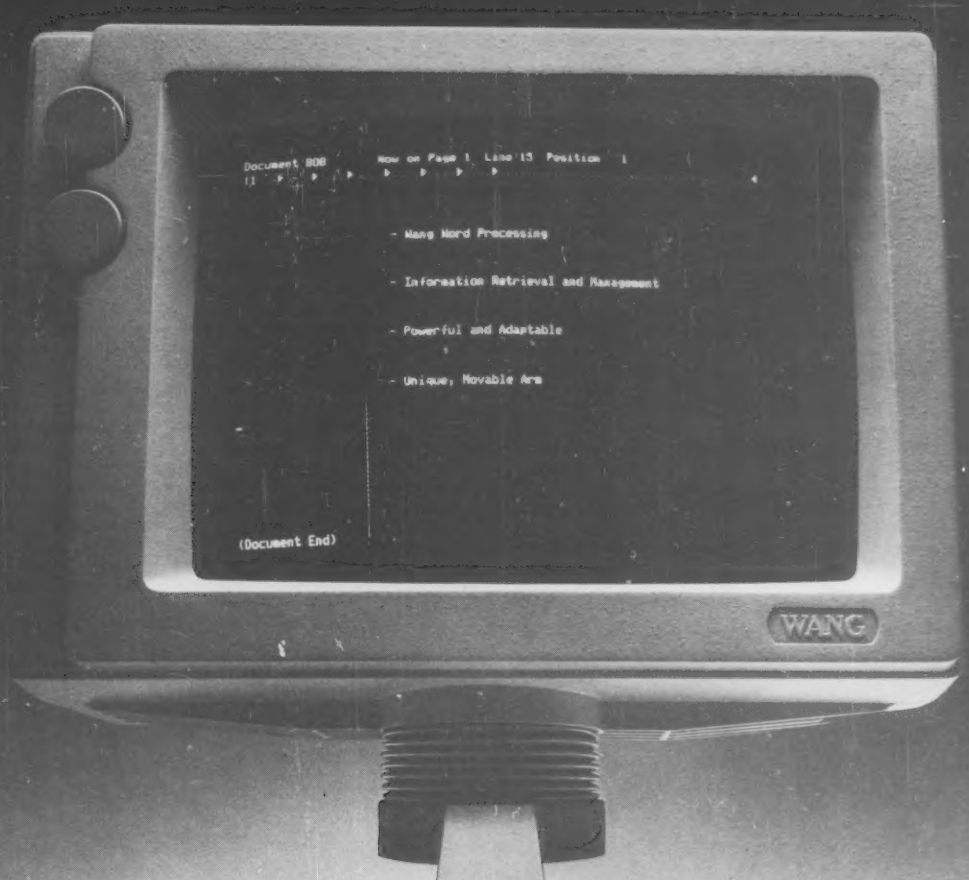
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IN DEPTH

them to make them work. The manuals must work.

As you begin the documentation process, use an instructional designer or an experienced document designer to give input to your format. It is worth hiring a consultant for a day or two for this, if necessary. The format will act as a blueprint or specification for all your writers. It will give you the tool you need to ensure that the documentation that is produced is relevant. The document should be designed based not only on what the machine can do but, more importantly, on what users will do with it.

Stay close to your users. Interview them and find out how they use and intend to use the equipment.

Once you have your format designed, meet with your writers and show them a model section of a manual, using your format. Also, show them some good examples of existing documentation that are similar. Next, train your writers to write to the format. Make sure the editor is part of your team all along the way. Involve him in the design of the format and the writing of prototype sections. Then ensure that as each author begins to write, he will frequently submit outlines and drafts to the editor.

Give writers immediate and frequent feedback on what they are doing right and wrong. The more specific you are about what is and is not working, the better off your final product will be.

We will not go into detail here about how or why to write at lower reading levels. There are many guidelines available on how to do this. In short, it means using short, simple, concrete words and writing in short sentences. Have someone check the readability of your documents by hand or send it through a computer program that analyzes reading level.

The important thing we want to emphasize is that it does not hurt to aim for an eighth-grade reading level for any document. Brighter people are not offended by simply written material. They just read it faster.

Arrange to have one editor, if possible, edit all your documents for a piece of equipment. Then ensure that this editor understands the importance of using terms consistently and keeping the language simple, clear and readable. Again, make him a part of your team.

Making It Look Good

We all know that we are drawn to documentation that is attractive. But what makes it attractive? A variety of characteristics — color, novelty and simplicity, for example.

How do you develop a creative, attractive package? If you are a writer or manager, let your artists be creative — give them full rein to select typography, layouts and covers. Tell them what kind of reaction you want the user to have when he sees the package and let them come up with ideas. It is wise to have at least two artists working on ideas in parallel before you decide on one.

The most recent finding is that users like documentation that is small. They like the smaller 6-by-9-in. size as opposed to the traditional 8½-by-11 manual. Why? It is less intimidating. Also, when you are operating a piece of equipment and using the documentation, you often put the manual on your lap. It is awkward to use the machine if the book is large.

You will also want to provide some attractive job aids for the various functions, features and commands on the equipment.

Those of us who produce documentation find it important to take time to make sure there is plenty of white space and the layout is clean, simple and useful.

Let the final test of how the material should look and read rest upon customers or users. Keep as close to the users as you can.

About the Authors

Joan Wackerman is manager of instructional development for the Human Resources Research Organization, a not-for-profit company in Alexandria, Va. She manages training contracts that require simplified training manuals.

Jim Gleason is a technical writer for the IBM Information Systems Division in Lexington, Ky., where he produces instructional and reference documents for office equipment.

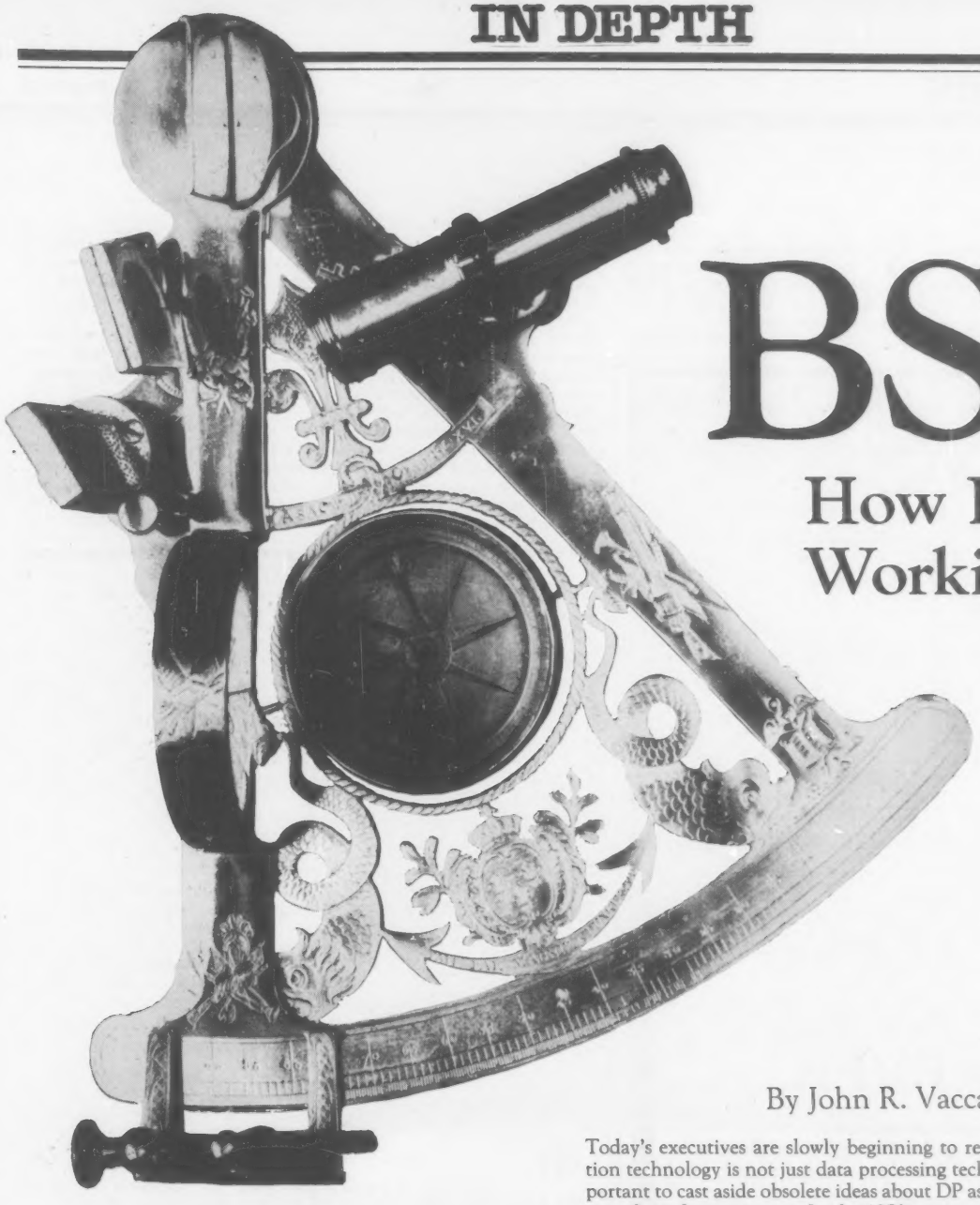
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BSP

How Is It Working?

By John R. Vacca

Today's executives are slowly beginning to recognize that information technology is not just data processing technology. It will be important to cast aside obsolete ideas about DP as corporations proceed into the information age. In the 1970s, momentum built toward the penetration of information management into non-record-keeping tasks. Now, ready to come of age in the 1980s is the application of this technology to aid management.

In recent years, there has been a proliferation of innovations in data processing, office information systems and telecommunications. Cost-effective transaction processing is replacing traditional data processing. In the '80s, the vision of information managers will be focused on corporate communications through teleprocessing, integration of information resources and executive and office information systems. Management will need a program comprised of business and systems planning (strategic planning).

I recently completed an informal survey of 112 U.S. corporations on the implementation of IBM's Business Systems Planning (BSP) methodology, defined by IBM as a "structured approach to assist a corporation in establishing an information systems plan to satisfy its near- and long-term information requirements" (see In Depth/11).

The purpose of the study was to determine whether BSP was implemented successfully, with special emphasis on its support of both the short- and long-term information needs of the companies.

We looked at various methods presently being used to implement BSP or some form of strategic planning. This was accomplished

IN DEPTH

through library research, personal interviews with IBM personnel and telephone interviews with others knowledgeable in the area of BSP. Two hundred twelve letters and questionnaires were sent to corporations of various sizes that were implementing BSP or some other strategic planning methodology. We asked questions about their implementation procedures and data models.

One hundred twelve, or 52.8%, returned the questionnaires.

The following discussion summarizes information gathered from the five small ($3 million to $20 million in annual sales), 13 medium ($20 million to $99 million) and 94 large (over $100 million) corporations that responded.

In general, the respondents indicated that they benefited from BSP or some form of strategic planning by gaining a better working relationship with their end users, computer users and top executives in the corporation. BSP helped them obtain top management's approval of long- and short-term plans. Key strategies such as data bases and interactive and distributed processing with central control were supported. In many of the companies, the BSP concept provided the opportunity to introduce IBM's information center concept to satisfy many of top management's information needs.

Major BSP Activities

When developing independent applications for various user departments, BSP will contrast sharply with the traditional approach. The

(Continued on In Depth/12)

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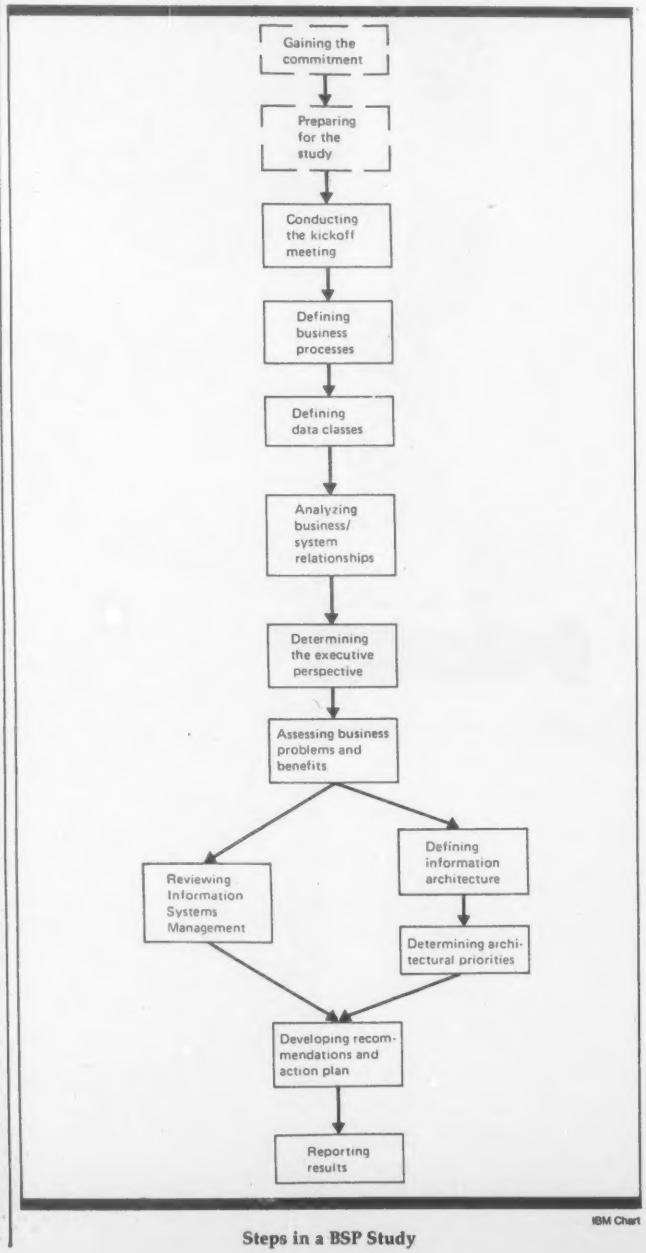
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IBM Chart

Steps in a BSP Study

A Corporate Strategy for Systems Planning

Business Systems Planning is IBM's structured, documented methodology for information systems planning. A BSP study is a corporate activity to establish an information system plan based on requirements defined by top management to support the business. During the six- to eight-week study, the data and systems required to support the business are identified and prioritized. The study provides an action plan for application development, data base development and continued information system planning.

While BSP, developed in 1970, is not the only strategic planning methodology around today, it is the root from which the others have evolved.

Until recently, the typical approach to developing data processing applications was to undertake each one by itself. Typically, organizations gave insufficient thought to the potential value of sharing information across application boundaries or supplying it to management for purposes of improved control. Certain business information needs went unfulfilled, resulting in data redundancy, excessive use of DP resources and insufficient return on the DP investment.

IBM's stated objective of BSP is to establish "an information systems plan to satisfy a corporation's near- and long-term information needs."

How Systems Succeed

BSP is also based on a conviction that the success of any businesswide information system depends on the following: executive commitment; establishing information systems objectives; understanding the business; using a "top-down" approach in studying the business; using a "bottom-up" approach for implementation; creating a plan that builds from existing systems modularly to an integrated architecture; and installing information management functions.

In addition, BSP provides for the impartial establishment of information system priorities, development of long-life systems, management of DP resources, increased confidence in a high return on information systems investments, better relationships between the systems department and users and an increased awareness that data should be used as a resource by everyone.

The plan that results from a BSP study represents the best thinking at a certain point in time; it should not be considered unchangeable. The real value of the BSP approach is that it offers corporations the opportunity to (1) define an information system function to continue the planning process and (2) create an initial plan of action and environment that can enable a business to react to future changes in priorities and direction without radical disruptions in systems design.



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(Continued from In Depth/10)
different information needs of general management, functional management and operational management are recognized by a BSP study. Systems are designed with a general management perspective and are aligned with the corporation's business goals; therefore, planning is top-down. Data is treated as a valuable corporate resource that is planned and managed like other resources.

Therefore, at the completion of a five-to seven-month BSP study, the corporation should be on its way to a comprehensive long-range information system and an action plan for short-term results. If a BSP study is structured, documented and supported by education, it should be successful.

BSP is part of an overall cycle for providing the business with required information. It is a methodology for identifying the business requirements.

Without regard to the total requirements of the business unit, projects in many businesses today are defined to address a functional area of the business. So, in order to avoid fractionalization of data and systems inconsistencies, BSP can provide overall direction for the business before projects are undertaken.

The BSP study progresses from the very broad world in which the business exists down to the data required to run the business. Business processes and objectives are then supported by the information system that has been defined in such a way as to categorize data into classes.

There are two major activities that precede a BSP study and 11 in the study itself, as shown in the figure on In Depth/10. None of the activities can be omitted, even though they may be carried out in varying degrees.

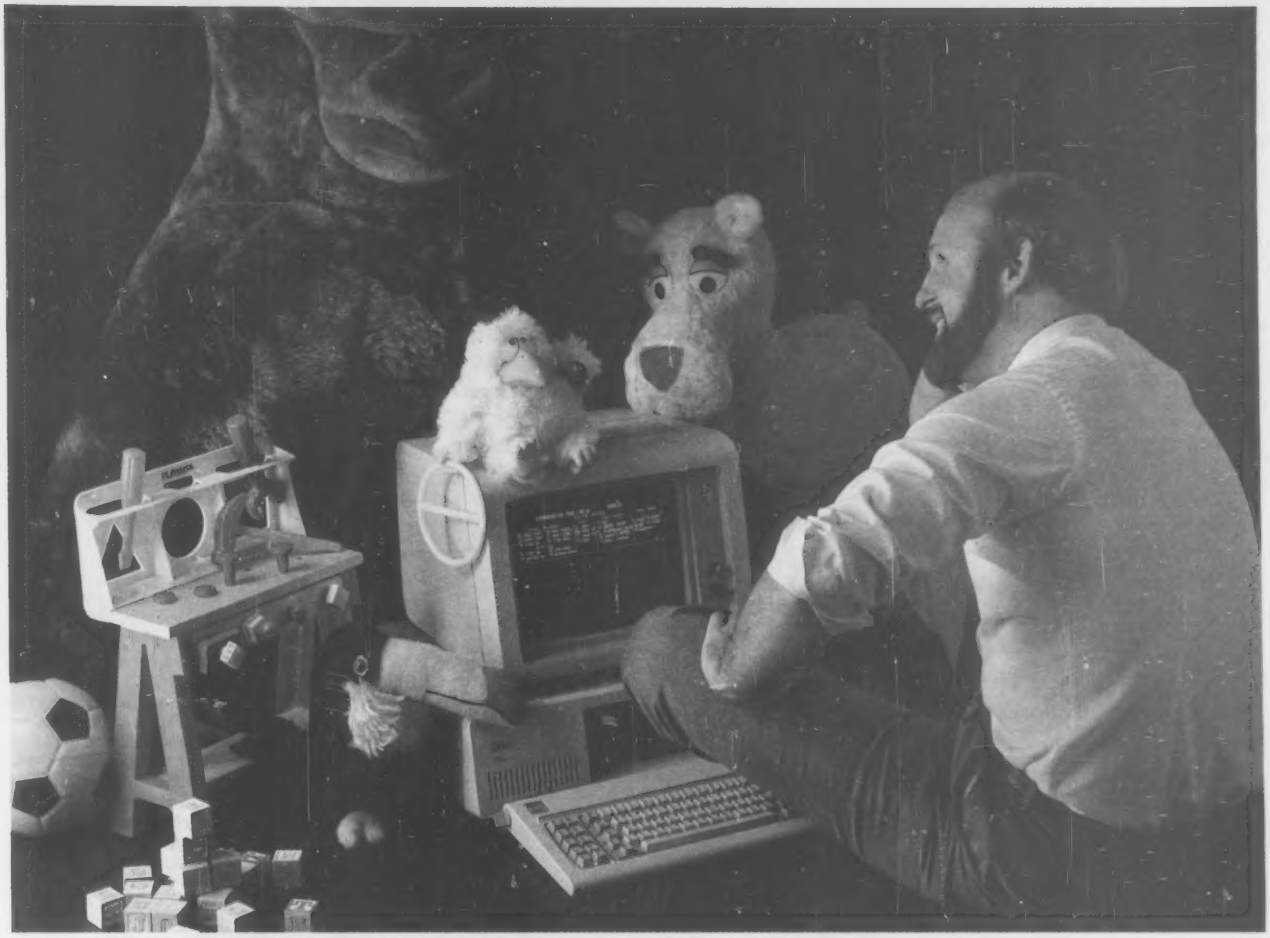
Gaining the commitment. The most important of the major activities is gaining commitment. Unless a top executive sponsor and some other executives are committed to being involved, the BSP study should not be started. The success of the study, then, depends upon the executives providing the information requirements and business understanding to the BSP study team. The team's work reflects the executives' view of the business.

In order to minimize future misunderstandings, it is important at the outset of the study to get an agreement on the scope and objectives and on its expected deliverables, since approval of recommendations commits the company for several years to a certain direction in the use of its DP resources.

Selection of the team leader, an executive who will work full-time in the study and direct team activities, is the most important action following the commitment. Once selected, the team leader sees that input from other executives is interpreted correctly and that contact with them is on the proper level.

In the survey, 62.5% of the respondents indicated that the commitment to start a BSP study was made by a top executive of the corporation. Thirty-seven, or 33.1% of the respondents, were not aware





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IN DEPTH

of any commitment by a top executive to start a BSP study; and the respondents from five, or 4.4% of the corporations, felt that it was not applicable to their situation.

The commitment to start the study was never solely initiated by computer personnel.

Next the study objectives must be defined. Good objectives should be capable of being stated clearly and concisely. In measuring the degree to which they have been met, criteria must now be applied. They will only be applicable to the specific requirements of the organization to be studied. Within the defined study scope, they will be capable of being satisfied by the BSP study team.

'The survey respondents emphasized the importance of the team selection process. The study team is responsible for determining the information needs of the entire business and recommending the nature of its data processing operations.'

More than three-fourths of the corporations indicated that their study objectives were defined and satisfied by the BSP study team.

Commenting on this step, David Currin, application systems manager for J.C. Penny Life Insurance of Dallas, indicated that all of the study objectives were defined under his company's own strategic planning methodology called Resource Management Process. He indicated that his organization "prioritizes and manages strategic projects separate from shorter range operational projects, thereby protecting strategic work." In addition, he indicated that they use the project management system named Spectrum as a tool to support Resource Management Process.

The survey respondents emphasized the importance of the team selection process. The study team is responsible for determining the information needs of the entire business and recommending the nature of its data processing operations. Kim Kramer, data base administrator for the Central Parts Division of Clark Equipment Co. (After Market Parts Distribution in Chicago) reported that their team members had several years' experience within the organization, a sound knowledge of their own area and an appreciation of the rest of the business.

Study Preparation

Proper preparations before the study save time, avoid frustration and lead to higher quality output. In this step, the expectations of the participants and the team should be outlined specifically.

Most of the corporations' team leaders held a half- to full-day orientation session to brief the study teams.

Preparation for the study was completed by a successful review meeting with the executive sponsor in 56.3% of the corporations that responded to the survey.

Initial meeting. The kickoff meeting includes the BSP study itself and full participation of the team members. Most of the respondents said that their team leaders walked through the business facts that had been gathered and made subjective comments and additions on facts that could not be readily documented.

The executive sponsors opened the meeting for about half of the responding corporations, emphasized the business reasons for initiating the study and explained the significance of the high-priority programs. Also in about half of the corporations, the study team leaders reviewed the work plans. A copy of the presentation was made available to the team members while they were developing their conclusions and recommendations. These copies helped them later in the study — during the interviews.

Business Process. Identifying the

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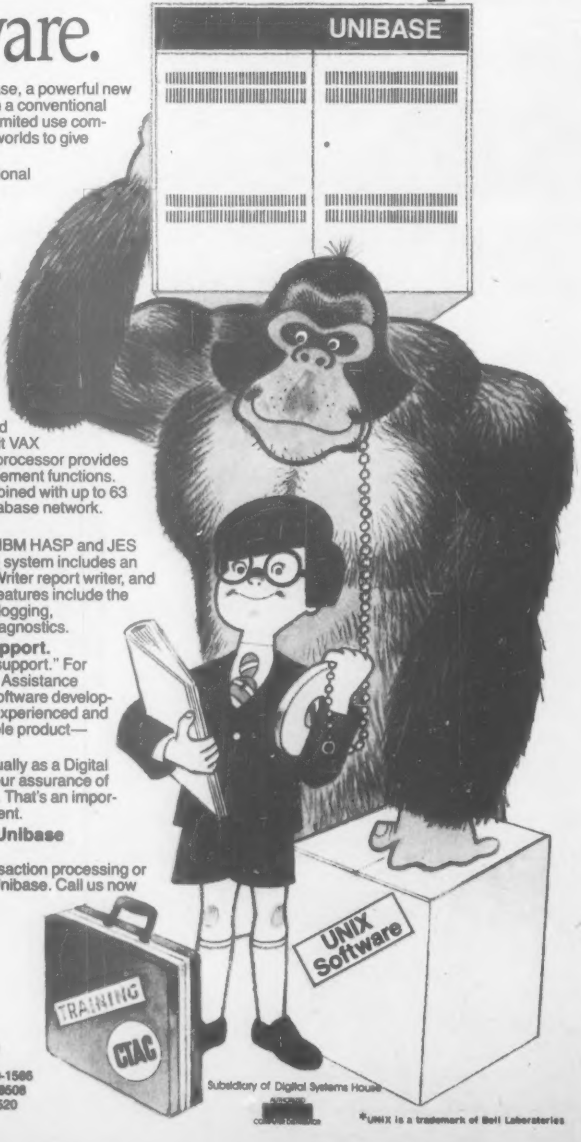
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business processes is one of the most overwhelming and important activities during the BSP study. Everyone on the team must be able to understand, identify and write descriptions of the processes. The major output from this step is a list of all of the processes, a description of each and the identification of those that are key to the business' success.

For purposes of the BSP study, the business processes were defined and "grouped into logically related decisions and activities that were required in the management of the business resources" by 51.8% of the corporations that responded to the survey.

As an alternate approach to identifying the business processes, a sample model of the business was used by 25% of the corporations.

Instead of using a model, John Cartin, ADP planner for the State of Kansas Department of Revenue in Topeka, explained that his organization's processes were "brainstormed," then discussed and defined. A list of taxes and fees that the agency administers was used to ensure completeness. The budget cycle provided a checklist for administrative functions, he noted.

Data class definition. Data class definition helps the business to develop data bases over time with a minimum of redundancy and in a way that allows systems to be added without major revision to the data bases.

The data classes were identified according to two approaches by 51.8% of the respondents: business entity and business process.

R.B. Wilmot, manager of data base administration for Amdahl Corp., Sunnyvale, Calif., commented that "data entities" instead of "data classes" better "suited their purpose" in defining and grouping data into logically related categories.

Analysis of business systems. In order to develop recommendations for future action, an analysis of business and systems relationships shows how data processing currently supports the business.

Various matrices were developed using the combinations of organizations, business processes, information systems and data files. However, 29.5% of the corporations eventually found out that even though matrices provided an overview of cur-



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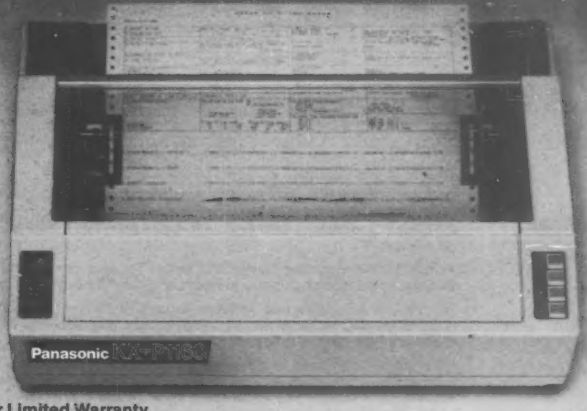
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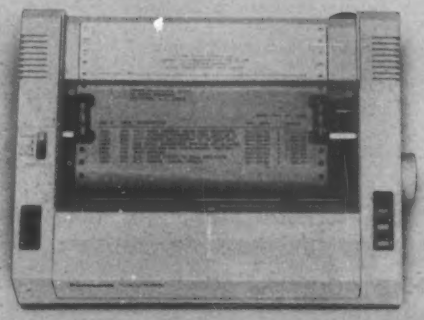
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IN DEPTH

rent and planned DP support they could not indicate the extent of support needed or the value of support to each of the processes.

Defining the information architecture. The major process of examining the present and arriving at a synthesis of the future is represented by defining the information architecture. Future information systems and their accompanying data are sketched.

After 40, or 35.7%, of the corporations had acquired an understanding of the business processes and the data required to support them, their teams continued the analysis by determining how the data was managed to support the processes. Also, the data could now be logically grouped into data bases after the data classes had been identified. Information systems became vehicles that were used to insert data and extract it from data bases in order to formulate useful management information to support the business processes.

'The final report and executive presentation were the vehicles for obtaining executive management commitment and involvement in implementing recommendations from the BSP study. Even though report formats were agreed upon before the study, many of the formats had to be modified because of the results.'

Establishing a controlled environment. The BSP study team must establish priorities for developing the systems and data bases, since a total information architecture cannot be developed and implemented all at once. Therefore, the team establishes which subsystems will be defined during the follow-on project by deciding which of the data bases should be designed and implemented first.

Many survey participants indicated that they identified and recommended follow-on projects to management immediately, in order to begin the implementation as early as possible. The foundation for implementing information systems was established on a "pay-as-you-go" basis.

Richard Branton indicated that the study team for Southern Co. Service, Inc. recommended priorities and that a "program review committee" estabishes priorities for his organization.

Presentation and final report. The final report and executive presentation for 51, or 45.5% of the corporations, was the vehicle for obtaining executive management commitment and involvement in implementing recommendations from the BSP study. Even though the formats were agreed upon before the study, many of the reports had to be modified because of the results.

Follow-On Activities

The BSP study should end after development of an action plan for the follow-on activities and a presentation for management approval. Of course, the follow-on activities and the emphasis placed on each will vary from one BSP study to another because of variations in findings and conclusions.

In order to support the business effectively, 40 of the respondents initiated a management information system. According to the recommendations of the BSP teams for 91, or 81.2% of the corporations, a high-priority system was developed and implemented first.

Financial Analysis

The results of this survey and telephone interviews with corporate executives indicate that companies are being forced to look at their assets in a much different way. Recent studies such as one by consultant A.T. Kearney show that from 10% to 95% of a corporation's assets may be tied up in analyzing and delivering information. An even larger percentage of these assets will be devoted to producing information in the near future.

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IN DEPTH

equipment, systems and money that combine to produce effective decision-making information? Corporations that can answer that question and successfully implement the solution should outperform their competitors in the coming decade.

If the information agent is managed well by a company, that corporation probably does a lot of things well. It is likely to have a well-thought-out long-range business, manpower and capital budgets plan — and most likely monitors its performance against these plans.

BSP requires diverting manpower and other scarce resources from more immediate tasks. Discipline and constraints are imposed by BSP on managers and higher level business executives. Managers often view constraints as hostile to their short-run interests. Therefore, during strategic planning, any lack of top management support can be serious and even fatal to the plan. Managerial support is needed not only in getting started, but also in following up to measure adherence to plans.

'During strategic planning, any lack of top management support can be serious and even fatal to the plan. Managerial support is needed not only in getting started, but also in following up to measure adherence to plans.'

Carefully conceived policies and procedures delineate the BSP study responsibilities, scope, methodology to be employed, the planning cycle and review and control. There can be little quality control over the study without adherence to the guidelines.

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The benefits of BSP accrue to both the information systems group and the organization as a whole. Greater unity and the focus of information systems management attention are included among those benefits. The prime ingredients for success are a common mission, greater communication and top management commitment.

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About the Author

John R. Vacca is a data base technician for the Atchison, Topeka and Santa Fe Railway Co. One of his major job responsibilities is the design of logical data bases.

Prior to joining the DP staff at Santa Fe Railroad, he was an internal auditor for three years.

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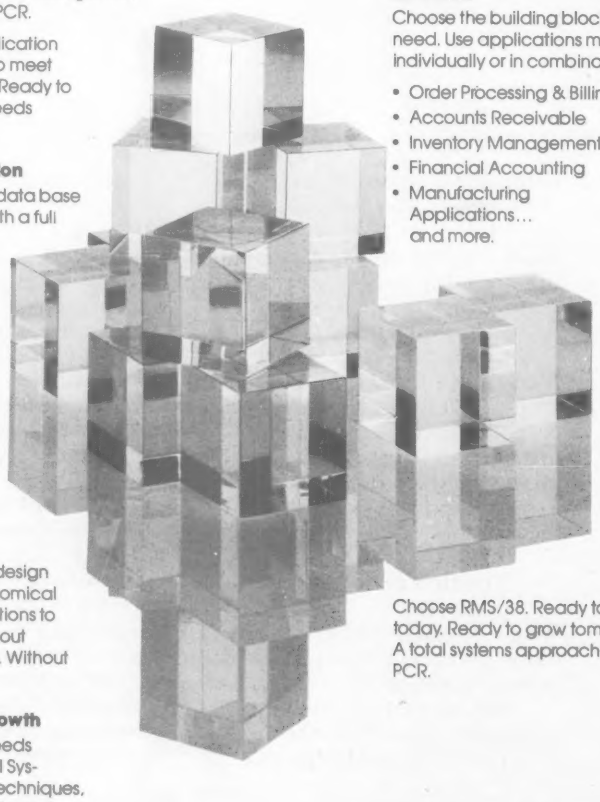
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As features editor at the industry's busiest weekly, I'm inundated every day with manuscripts. They come in all shapes and colors: the classic management piece, how to normalize forms in data base, how to really get your applications backlog cleaned up this time. So into this world of ordinary manuscripts one day comes a sheaf of papers with an odd cover letter that modesty and good sense prevent my reprinting here. Suffice it to say its one redeeming quality was that it captured my attention, and I began rummaging through the manuscript. After an hour and a half I reached the inescapable conclusion that this was the most outrageous stuff I'd ever seen. But there was another surprise in store. The letter was signed "Jim Van Speybroeck," and the writer claimed to live in Illinois and teach college in Iowa. I immediately suspected he was schizophrenic. I sent him our standard acceptance letter, which he was required to sign and return; his signature resembled the scratchings of a plotter with a damaged arm. My curiosity was piqued; I called this guy and all I got was an answering machine that sounded like R2D2. It was too much. I took the next plane to East Moline, Illinois, and when I walked into the residence of one Mr. Jim Van Speybroeck, I found a room jued by a humongous computer. It was the most incredible kludge I'd ever seen, made of junked parts from an Illiac III, two IBM 5100 terminals and a control console from what appeared to be a Whirlwind machine. Banks of magnetic relays clicked discordantly. Then I heard that scratchy voice from the answering machine again: "Hi, this is Jim Van Speybroeck. I can't take your call right now . . . right now . . . right now. . ." I couldn't believe it. Stepping up to the console, I tried stopping the thing, then noticed the date on the digital calendar: April 1. ▶

By
Jim Van Speybroeck

–Jack B. Rochester
Senior Editor
Special Projects

IN DEPTH



YOU TAKE THE HIGH LEVEL, I'LL TAKE THE LOW LEVEL

I have had it with the terms "high-level" and "low-level" as they are used to describe programming languages. For the past 10 years, I have programmed in the Basic Assembler Language (or ALC, if you have IBM equipment). The flexibility and power of assembler are nothing short of exquisite. Assembler compares to Cobol as the Cathedral of Notre Dame compares to a pup tent. And yet, who gets all the glory? Who receives the accolades? Right! The Cobol programmer. After all, Cobol is a "high-level" language.

High-level implies nobility, truth and beauty. Low-level is life in the gutter. And you can forget the rationalization that "Oh, that's just industry jargon." That argument means nothing when the supermarket refuses to cash your check: "Oh, you program in a *low-level* language."

I suppose a great deal of my bitterness has historical roots. As an undergraduate, I majored in mathematics. Several of my courses were prefixed by the phrase "introduction to." The course material might rival the complexity of a Grecian labyrinth, but the title still contained that blasted "introduction to." I remember battling differential equations to the point of suicidal despair as my mother would quietly whisper, "But Dear, it can't be all that hard. It says on your report card, 'Introduction to Differential Equations.' " Believe me, "high-level" and "low-level" produce the same ulcer-prone condition.

Let's be honest. Programming in Cobol is like writing a pulp novel: shallow, easy and boring. But exploring assembler is a fascinating adventure, resplendent in awesome beauty; as exciting as a first visit to the Louvre. Yet, who gets all the medals? The Coboler. And what of the assembler programmer? This poor blighter eats in the kitchens and sleeps in the streets.

This inequity must cease. To all Cobol programmers reading this article, I toss my gauntlet at your feet as I bellow with absolute resolve, "You have fired on the lifeboats once too often!" It is time to fight back! Therefore, I propose the following: The government should fund a massive study comparing the nature, intelligence and personality of assembler programmers with Cobol programmers. I am certain the following results will emerge:

1. Assembler programmers physically resemble (depending, of course, on sex) either Hercules or Helen of Troy.

2. Even the most ordinary assembler programmer has the wisdom of Solomon. Cobol programmers have the I.Q. of a bush.

3. Assembler programmers are very articulate and are loads of fun at parties. Cobolers, on the rare occasions when they are invited to social gatherings, invariably end a meal with a piece of spinach between their teeth and can't wait for the band to play a cha-cha.

To continue with my Aristotelian insights, how shall I compare assembler with RPG? Fortran? PL/I? Pascal?

RPG is a tinker-toy language. For those readers who are unfamiliar with RPG, it is an acronym for Report Program Generator. RPG is a language invented by IBM for dummies. RPG reminds one of a "paint-by-number" project. Ostensibly, if you put the right paint with the right brush on the right number, you wind up with a masterpiece that rivals the ceiling of the Sistine Chapel. As you all know, what you really wind up with is a mess. Now if you only had one or two numbers with one or two paints, your picture probably wouldn't look all that bad (like a flag or something).

When IBM invented the language, they intended RPG to accomplish

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only a few simple things. Ergo, the novice programmer would punch a few characters in a few predetermined columns of a coding sheet and the results were acceptable.

What IBM did not count on was the fact that there are millions of dummies out there. They all loved RPG. But after about six months, these users got tired of printing flags and wanted to do other things like design a program or build a Cruise Missile. Thus, IBM found itself in a rather unenviable situation. The company had to find a way of modifying a language that was originally intended to crawl into a language capable of the speed of the Concorde. Well, once again, IBM did it. So now, all you have to do is punch more characters in more columns and you can do lots of things.

RPG takes no talent, no creativity and no sense of logic, but it does require a great deal of patience because nothing happens in RPG unless certain things called indicators are turned on or off. And when you want them on, they are always off and when they are off, you always want them on. This is difficult to explain, but ask any RPG programmer and they will verify same. However, all of this is secondary to the fact that as a language, RPG does not deserve to shine the bootstraps of assembler.

Fortran (for "Formula Translation") is a computer language invented by mathematicians for mathematicians. Calculating is fun in Fortran. Even the names for calculating are fun — like SQRT for finding square root. Fortran is a snap if you are a scientist or an engineer. However, business people hate the language and can't stand the way Fortran programmers dress — that is, in white togas with big buttons saying "DO" and "GO TO" pinned all over.

There really is no need to elaborate any further. Suffice it to say that assembler compares to Fortran as a monastery compares to a bordello.

PL/I was also invented by IBM. This language takes the best of Cobol and the best of Fortran and combines these features to form what IBM hoped would be the Mount Olympus of programming languages.

The whole project was doomed from the start. The initial problem was the name. At first they chose Cobtran. However, that didn't "sing," so they picked Forbol, which was even worse. As a compromise, they settled on PL/I or Programming Language One which, they reasoned, was dull enough to bother no one. (However, the reader might be interested in another name which I suggested: Forcobtranol. I thought it was real catchy, but IBM never returned my calls on the matter.)

As I said, from the point of inception, the whole project went down the drain. Jealousies were particularly severe. The Fortraners claimed that there were too many Cobol statements in the language and that the Fortran statements were diluted. The Cobolers said that the Fortran statements in the language were ruining their reputations and bringing down software values. The end result was constant backbiting and, eventually, vandalism.

In Framingham, Mass., four scientists were arrested for breaking the windows of a car that displayed the bumper sticker, "Honk if you love Cobol." Again, why should we go on? If you like violence, program in PL/I. If you wish peace and tranquility, program in assembler. However, the inequity still exists: PL/Iers are invited to join country clubs. Assembler coders aren't even allowed in public parks!

By this time, it should be perfectly obvious to the reader that I am the very soul of objectivity. Therefore, in justice some reference should be made to the relatively new languages, Pascal and Ada. Both of these languages do have some advantages in the way in which they manipulate data. However, neither language has the "macho" appeal of assembler. I look for both Pascal and Ada to be relegated eventually to a sort of off-the-wall occult status.

I hope this brave, objective defense of assembler will cause the language to gain its rightful place as the highest of the "high-level" languages.

The Whole Truth On Computer Evolution

The computer is a swell machine. But, you know, computers just didn't happen over night. It took a long time for those miracle machines to evolve. And it's my guess you'd like to know the truth about this evolution. After almost three weeks of painstaking and off-and-on research, I have the unexpurgated scoop.

The original computer was a stick. On this stick, the prehistoric data processor could carve notches (collection) for each dinosaur who was attacking his cave, mutilating his wife and eating his children (obviously his scientific detachment was just super). By counting the number of notches (tabulation) and taking note of the number observed (analysis), the caveman could communicate with his fellows to determine migratory habits, proper feeding and adequate health care considerations.

The second-generation computer was known as the abacus. The abacus was invented by a Japanese mercenary who had a Chinese



mother. The mercenary fought with the Romans in Hindu-Arabic countries. As you know (or should know), the abacus had popcorn threaded through string with a place value for all the days of the year except Christmas when, for some unknown reason, all abaci completely disappeared. But except for that day, it worked pretty well.

On one occasion, just before our Japanese mercenary murdered a Hindu-Arabic gentleperson, the two of them had had a drink together in a little bar in Casablanca called Rick's Place. The Hindu-Arabic gentleperson told the Japanese mercenary of an idea he had for a set of numerals with a place value system. The idea continued to fascinate the mercenary, and when he returned to Rome for R&R, he told his buddies about it. They didn't like the idea, so they killed him.

But a Venetian shriner, in Rome on a convention, overheard the conversation and picked up on it. Thus we got our first positional numeral system, the Venetian Numerals. Twenty years later, the city-state of Venice was sued by the Hindu-Arabic AAUP representatives and a judge ruled that the name "Hindu-Arabic Numeral System" be used on all further correspondence.

The next 400 years were a period of triumph and tragedy for mathematics and computer science. In the 1500s, Thomas Hariot, the English mathematician and astronomer, made significant innovations in methods of tabulation.

(Continued on In Depth/22)

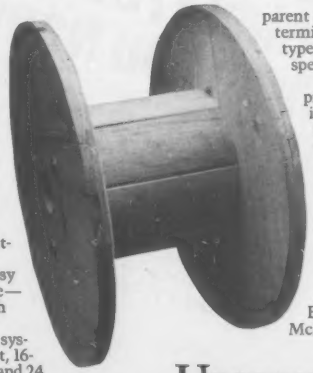
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IN DEPTH

(Continued from In Depth/21)

However, when Carl Sagan tried to gain an exclusive interview with this very shy man, Hariot fled to Cairo, changed his name, dropped his research in mathematics and computer science and opened a combination pizza and mummification parlor. If it had not been for this unfortunate turn of events, we surely would have had Space Invaders and Pac-Man 200 years earlier.

The next giant step in the history of computing occurred in 1590 when John Napier, a Scottish mathematician, invented the logarithm, or "ratio-number." The logarithm is a cylindrical rod that can easily be inserted between broken or fractured bones to facilitate healing. The logarithm was used successfully to reconnect the head and body of the French mathematician Blaise Pascal when he got into trouble with Robespierre during the French Revolution. Pascal went on to build the very first mechanical calculating machine. (Leibnitz and Schickardt disputed this claim; both were very spiteful and became known as the Sour Apples II.)

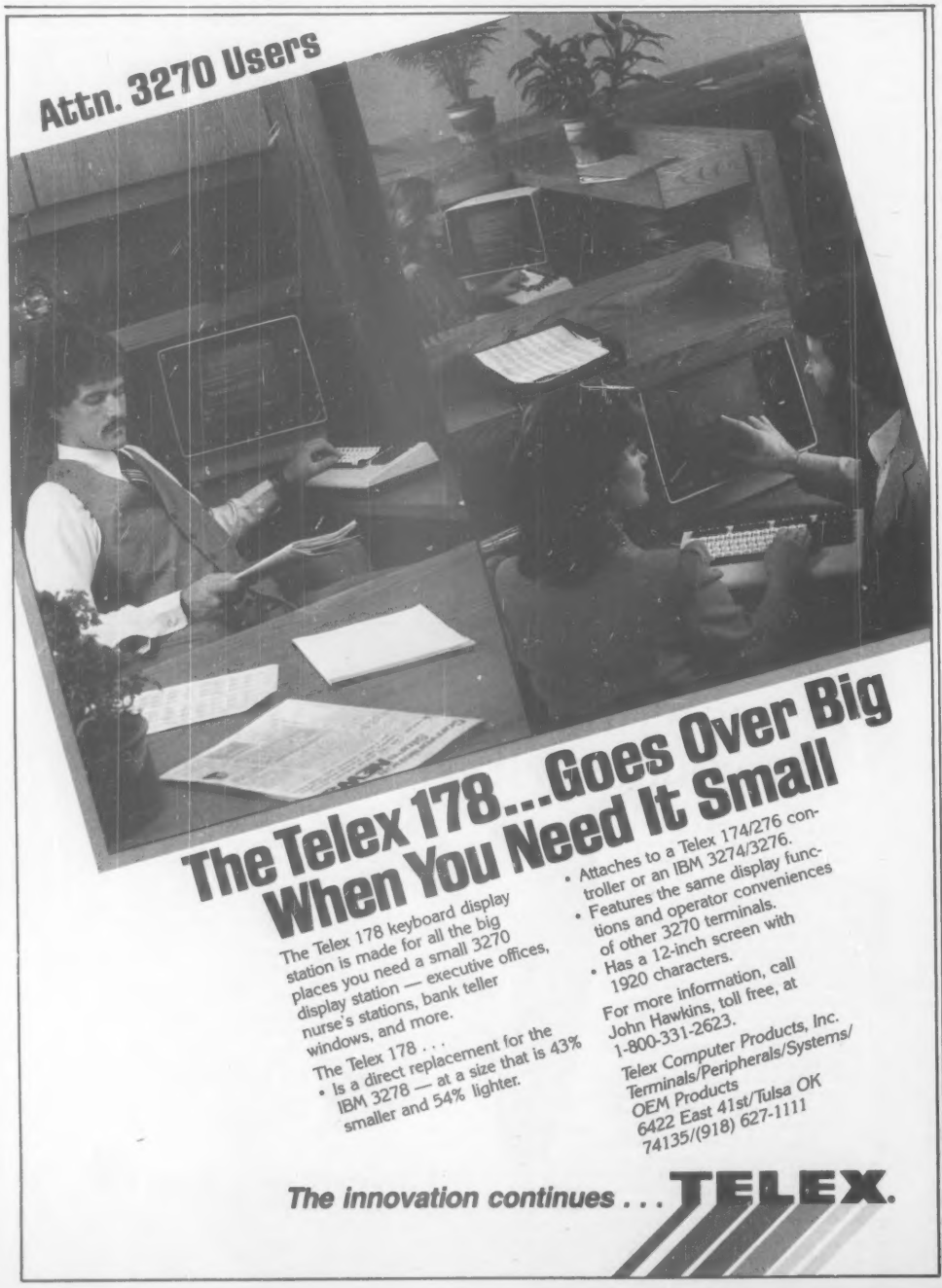
No one could come close to a British inventor named Charles Babbage. In 1803, Babbage applied for federal aid to construct what he referred to as his "analytical engine." After 10 years, he had the thing up and running beautifully. But one of his principal assistants, Ada Augusta, the Countess of Lovelace, turned out to be his undoing. At that period in history, all programmers were expected to be male. Scotland Yard got wind of the matter and arrested both Babbage and Ada Augusta. They were subsequently shut up in a monastery and convent. The analytical engine was abandoned. The British government eventually sold it for scrap to a young American engineer, Herman Hollerith.

Hollerith was intrigued by the analytical engine because it reminded him of the Los Angeles skyline. His original plan was to disassemble the engine, reweld it and sell it to the City of Chicago as an art work.

However, at about that time, the government began to have trouble keeping accurate records for mailing Social Security checks. In 1890, the Bureau of the Census warned Congress of the danger of the situation. Worried about the next election, Congress authorized a competition to solve the problem of data analysis. Hollerith entered the competition, played the Rachmaninoff Second Piano Concerto and won hands-on.

Hollerith's system, known as the punched-card system, was a fantastic success. His original idea for the punched card came from watching player pianos. (It is interesting to note that Hollerith later admitted that he had never really played the concerto at all, but had slipped in a piano roll when the judges weren't looking. The judges did think it a bit odd that Hollerith was consistently two beats off from the orchestra, but dismissed the event as the result of a faulty multiplexer channel.)

Anyway, as I said, Hollerith's system was a success. He had redesigned the engine into three pieces of equipment: a pantograph punch, an electric tabulator and a semi-automatic machine gun (for protection against patent infringements). Using Hollerith's equipment, the government completed the 1890 census in one-third the time required for the 1880 census, despite a population increase of more than five people.





ADVICE GALORE ON COMPUTER SCIENCE

Dear Computer Answerman,

Our teacher always talks about the CPU and the arith/logic unit and the wonderful things they do for us. But



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IN DEPTH

when I ask her where the arith/logic unit is physically housed inside the mainframe, she always evades my question. Could you please tell me?

Rebecca of Stonybrook U.

Dear Rebecca,

The physical location of the arith/logic unit has puzzled computer scientists since the first century. Ptolemy placed it somewhere between the Valley of the Kings and the Valley of the Dolls. Pascal believed it was close to the Folies-Bergere and searched for it most nights of his adult life.

But the answer to your question, Becky, is this: There is no solution, just intelligent alternatives. My personal belief is that the arith/logic unit is housed in the computer center somewhere between the forms burster and the wall separating the DP center from the washrooms.

Dear Computer Answerman,

I realize that overlapped processing is possible only if the computer system has the input/output channels. I also know that channels are those components which direct and control the flow of data between I/O devices and main storage. The sequence is explained as follows: The supervisor provides the channel with the address of the first command in a list of commands. After being activated by the SIO instruction, the channel then carries on with the I/O operations through a series of channel commands, with the first of the series being a Channel/Address Word. The list of commands then proceeds to a successful completion.

Although I have studied the channel procedure and concepts for several weeks, I find the whole thing very difficult to understand. Could you simplify the procedure?

Cap Nemo

Dear Cap,

Why are you wasting your time with this channel stuff? It's about as beneficial as an ejector seat in a submarine.

However, to assuage your curiosity, let me direct you to one source of information. In 1950, Harry Belafonte recorded a song called the "Channanel Byte Song" in which he explains the procedures quite well. It goes something like this: "I-Oh; I-I-I-Oh, Data Come And It Want Go Core." Technically this should be more than sufficient to meet your needs.

Dear Computer Answerman,

I have read your column since I matriculated at Villa Nova University four years ago. I have a double major in computer science and applied mathematics. My question, sir, is this: Do you have any idea what you are talking about? It appears to me that everything you write is gibberish. Let me cite just two examples.

In a recent article, a student inquired as to the cause of data exceptions in assembler language programs. Your response was, and I quote, "Data exceptions are caused by a 5- to 10-mile-per-hour westerly wind blowing across the Adriatic Sea." I have consulted every IBM and Univac manual on assembler languages and can find no supporting evidence for your answer.

Again, in response to an historical question addressed to you some months ago, you wrote, "Dr. Herman Hollerith and Charles Babbage did, indeed, collaborate on the invention of the Mark I." That statement has been branded as idiotic by every accepted authority on the history of computing.

I cannot rid myself of the nagging thought that you are a fraud.

Ms. Tess D'Urber of Villa Nova

Dear Ms. D'Urber,

I am and always have been just an old teacher doing his duty. Although at times my answers appear to be "off the beaten path," you must remember that these are the answers of a visionary.

Still Your Friend,
Computer Answerman

About the Author

Jim Van Speybroeck is an adjunct associate professor at St. Ambrose College, Davenport, Iowa. He has taught college-level computer programming courses for the past nine years and prior to that was assistant vice-president in charge of DP for the State Bank of East Moline, Ill.

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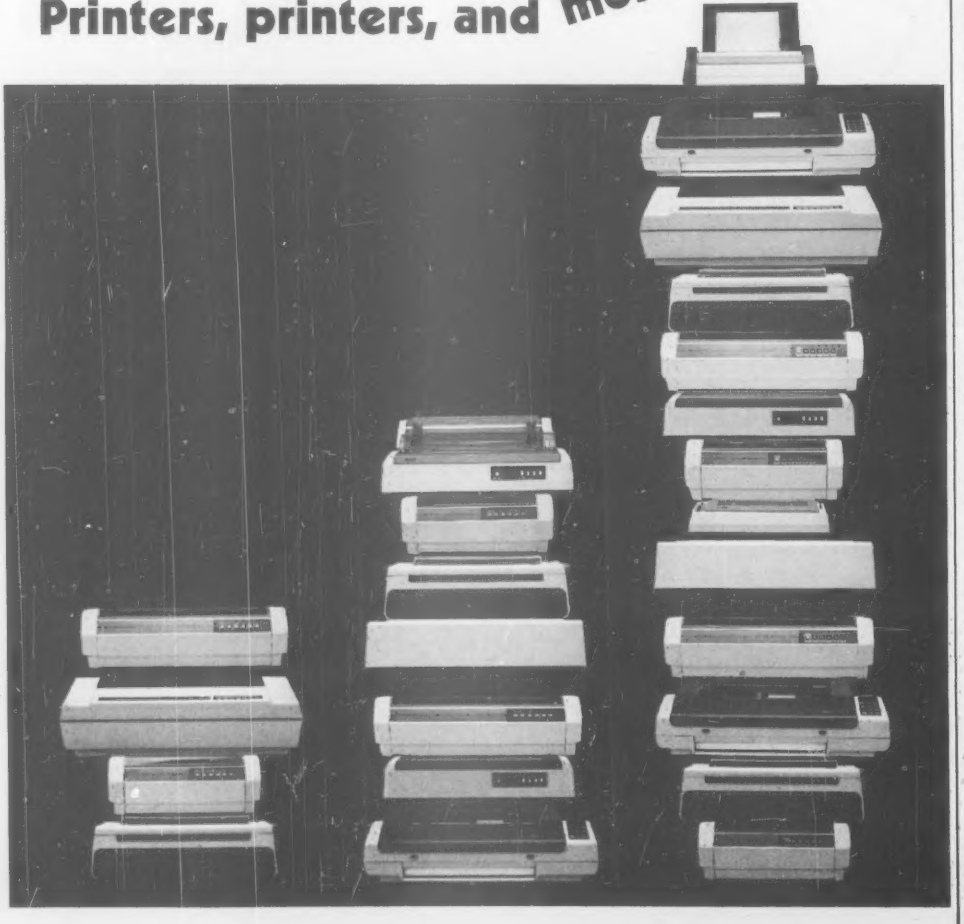
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SPECIAL REPORT

Micros in Big Business
Opening the DP Window



Edited by Susan Blakeney and Tom Henkel

March 28, 1983

COMPUTERWORLD
THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Micro Market Going Full Steam Ahead; IDC

By Susan Blakeney
CW Staff

They're small, cheap and efficient.

With all the appeal of the subcompact car, the microcomputer has burst onto the data processing scene, and at least in number, is taking over. According to a recent report from International Data Corp. (IDC) of Framingham, Mass., the desktop computer market will soar in dollar value from a 1980 U.S. installed base of $1.06 billion up to $41.9 billion by 1986.

With the advent of friendly English-like software and even friendlier price tags, it is hardly a surprise to find former mainframe-only organizations making their way toward microcomputers to relieve DP backlogs, placing more computing power directly into the hands of end users.

While 67% of the IDC survey respondents claimed to have formal policies regarding microcomputer acquisitions in their organizations, 17% said they had only informal guidelines, 6% were not sure of the corporate policy and the remaining 10% said there was no policy or plan whatsoever.

	Inst Base 1980	Ship 1981	Inst Base 1981	Ship 1982	Inst Base 1982	Ship 1983	Inst Base 1983	Ship 1984	Inst Base 1984	Ship 1985	Inst Base 1985	Ship 1986	Inst Base 1986
						UNITED STATES							
Business/Professional	1,066.5	1,423.9	2,490.4	2,914.0	5,404.4	5,434.1	10,838.5	8,150.0	18,988.5	10,455.0	29,443.5	12,495.6	41,939.1
Home/Hobby	251.7	143.3	395.0	306.0	701.0	501.6	1,202.6	651.0	1,853.6	747.5	2,601.1	834.6	3,435.7
Scientific	1,037.5	381.3	1,418.8	540.0	1,958.8	627.0	2,585.8	699.2	3,285.0	729.8	4,014.8	731.0	4,745.8
Educational	66.1	86.9	153.0	109.3	262.3	122.4	384.7	134.3	519.0	144.8	663.8	156.3	820.1
TOTAL UNITED STATES	2,421.8	2,035.4	4,457.2	3,869.3	8,326.5	6,685.1	15,011.6	9,634.5	24,646.1	12,077.1	36,723.2	14,217.5	50,940.7
						INTERNATIONAL							
Business/Professional	493.4	528.6	1,022.0	877.1	1,899.1	1,297.2	3,196.3	1,867.5	5,063.8	2,411.2	7,475.0	2,967.0	10,442.0
Home/Hobby	95.6	67.3	162.9	118.8	281.7	176.4	458.1	200.9	659.0	250.9	909.9	295.8	1,205.7
Scientific	678.0	314.9	992.9	432.9	1,425.8	506.0	1,931.8	576.3	2,508.1	649.6	3,157.7	710.4	3,868.1
Educational	67.5	59.8	127.3	73.7	201.0	79.0	280.0	84.5	364.5	92.2	456.7	94.5	551.2
TOTAL INTERNATIONAL	1,334.5	970.6	2,305.1	1,502.5	3,807.6	2,058.6	5,866.6	2,729.2	8,595.4	3,403.9	11,999.3	4,067.7	16,067.0
						WORLD							
Business/Professional	1,559.9	1,952.5	3,512.4	3,791.1	7,303.5	6,731.3	14,034.8	10,017.5	24,052.3	12,866.2	36,918.5	15,462.6	52,381.1
Home/Hobby	347.3	210.6	557.9	424.8	982.7	678.0	1,660.7	851.9	2,512.6	998.4	3,511.0	1,130.4	4,641.4
Scientific	1,715.5	696.2	2,411.7	972.9	3,384.6	1,133.0	4517.6	1,275.5	5,793.1	1,379.4	7,172.5	1,441.4	8,613.9
Educational	133.6	146.7	280.3	183.0	463.3	201.4	664.7	218.8	883.5	237.0	1,120.5	250.8	1,371.3
TOTAL WORLD	3,756.3	3,006.0	6,762.3	5,371.8	12,134.1	8,743.7	20,877.8	12,363.7	33,241.5	15,481.0	48,722.5	18,285.2	67,007.7

IDC Chart

Desktop Market Dollar Value Shipment and Installed Base Forecast

Dangers and Benefits

The IDC study discovered that while management information systems (MIS) departments in large companies recognize "the potential dangers of unchecked growth of personal computers," more importantly, they also see "the potential benefits of personal computer usage."

Furthermore, the study maintained, implementing personal computers across the organization "in many cases requires the MIS department to do substantial front-end work to ensure success." In fact, 70% of those organizations polled will look to MIS to train people on personal computers.

This is not surprising, as MIS logically appears to be the most familiar with the technology as well as with acquisition procedures and existing vendors' offerings. But the exact role of MIS in personal computing implementations varies from organization to organization, according to IDC's findings.

Likewise, the responding companies' major criteria vary widely for personal computers. For instance, vendor visibility was rated as the most important factor in choosing microcomputers, followed by software availability and manufacturer's reputation.

Consistent with these findings were the results of IDC's poll of organizations on which companies provide the best products in terms of business microcomputers: IBM, Apple Computer, Inc. and Tandy Corp. topped the list.

In terms of where microcomputers will be purchased, the vast majority of those surveyed said they would buy directly from the micro manufacturer, followed by retail stores and distributors. In addition, 60% said they wanted to establish special relationships to get volume purchasing price breaks with computer stores. In the same vein, 87% of those polled anticipated an organized and centralized buying process.

Standardization Issues

Other considerations in a company's microcomputer plan include standardization and security issues. IDC found that while "the type of standardization is really up to the individual organization to choose," they must prioritize vendors, operating systems, communications options and even the availability of programming languages.

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Predicts Installed Base of $41.9 Billion by '86

	Number of Responses
Vendor Viability	14
Software	12
Manufacturer's Reputation	7
Maintenance	5
Price	4
Communications	4
Reliability	3
Compatibility	2
Other	9
Not Sure	4

Selection Criteria for Personal Computers at Respondent Companies

	Number of Responses
IBM	23
Apple	18
Tandy	6
Digital Equipment Corporation	5
Hewlett Packard	3
Wang	2
Burroughs	2
Others	5
Not Sure	4

IDC Charts

Vendors That Respondents Think Offer the Best Solution

	Number of Responses	Percent
Word Processing	84	17.9%
Financial Analysis	74	15.8%
Accounting	61	13.0%
Education	61	13.0%
Engineering/Scientific	48	10.2%
Personal Record Keeping	29	6.2%
Data Base Terminal	25	5.3%
Manufacturing	12	2.6%
Graphics	8	1.7%
Games	7	1.5%
Payroll/Personnel	5	1.1%
Taxes	3	0.6%
Other	52	11.1%
TOTAL	469	100.0%

Total by Primary Application of Personal Computer

Next, the software question must be tackled: whether to go the route of packaged, self-developed software or MIS-developed software. Of 50 people surveyed, IDC found 29 who purchased microcomputer software right off the shelf, 21 people whose software was end-user-developed and 10 who received the software from MIS.

Asked whether microcomputer infiltration will affect data security, a whopping 64% said yes, 33% disagreed and 3% were unsure. In 80% of the organizations polled, personal computers should be able to access the mainframe and/or company data base.

All respondents were asked if they felt personal computers are or would be replacing traditional online IBM 3270-type terminals. Sixty percent agreed that while this change would not take place overnight, it would eventually come to pass. The vast range of applications available to personal computers seems to give weight to this theory; the microcomputer is more versatile than the dumb terminal — not to mention the fact that it costs less.

Finally, just what impact will personal computers have on DP's backlog of applications? Seventy percent of those surveyed indicated that the effect will be positive. In addition, the respondents described four potential scenarios:

- Users waiting for applications develop them themselves on personal computers.
- MIS develops these applications in less extensive form for the personal computer.
- Personal computers have no immediate impact, but future demand is lessened as users do more for themselves.
- The personal computers have no effect, as the applications that are automated by them would have been done manually and never on the mainframe.

Despite the last somewhat depressing scenario, the IDC report concluded on a positive note.

Some Advice for DP Managers on Micro Integration

By Edwin G. McMullen
Special to CW‡

The addition of microcomputers to a company's data processing operation has many implications. While micros certainly have the potential to improve productivity, they can also strike terror into the hearts of many senior DP managers who support the idea of centralized computing. The following summarizes some issues affecting the integration of micros into larger processing systems and suggests possible solutions.

Perhaps the most glaring problem is equipment standardization. There are more than 75 personal computers on the market today. If user departments are allowed to select among these without constraint, internal chaos will result from a mix of operating systems, languages, systems nuances, duplicate or multiple consumable supplies, keyboard layouts, training needs, spacing and maintenance.

The solution is to create a corporate selection standard based on how easily a given processor can be integrated into in-house computer systems and networks.

Software transportability is another issue. Major problems are going to arise over software ownership now that more non-DP professionals are writing their own programs. The best and perhaps only way to solve this problem is to establish firm guidelines governing operating systems, languages, applications, documentation requirements and compatibility with the existing in-house system.

The software issue is enormously complex, but rules developed early on in the system's integration process may at least reduce problems.

Data extraction is another sticky issue. When microcomputers interact with mainframes, there is a potential for many problems. The integrity of data, data structures, currency and validity are just a few potential problem areas. In some cases, the micro will be used in two distinct ways, such as an IBM Personal Computer offering local intelligence plus the ability to be used as an IBM 3270-type dumb terminal.

One solution is to provide microcomputer users with downloaded copies of data base information while maintaining strict control over direct access to mainframe processors. This method can be accomplished by restricting the number of people who can use the device as a dumb terminal. It offers added protection to the mainframe and avoids the potential chaos of unrestricted data extraction and input to central files.

In order to integrate micros into larger systems effectively, communications line efficiency is a must. A major cost and error factor in networks today is an overly complex network with too many lines. Some networks have everything from twisted pairs to coaxial cables, modems, multiplexers, front-end attachments and communications software. All these things can be the source of downtime, lower response time and overall inefficiency.

When implementing a microcomputer network, one should insist that micros use existing lines, front-end facilities and access methods. This will immediately save time, worry, disruption and failures.

The method of acquiring microcomputers is another important consideration. If a company buys the micros, it may lose out on a whole generation of newer processors, languages and peripherals. Few suppliers, however, will lease micros. The solution is to establish internal standards on whether to buy, rent or lease micros. Such a standard will help sort out undercapitalized local vendors and dealers as well as strengthen the firm's ability to move

(Continued on SR/4)

Ease Access to Corporate Data Bases

Spreadsheets Figure in Micro-Mainframe Link

By David Needle
Special to CW‡

Corporate microcomputer users want the vast wealth of information stored in their company's mainframe computers. And they want the DP department to help them get it.

Even DP managers who have staunchly resisted the idea of incorporating microcomputers into their firm's DP operations are being asked to provide mainframe data to micro users — often users who independently purchased micros to gain "freedom from the management information systems [MIS] department," according to Barry Passen, president of Microcon Software Center, a microcomputer retail outlet.

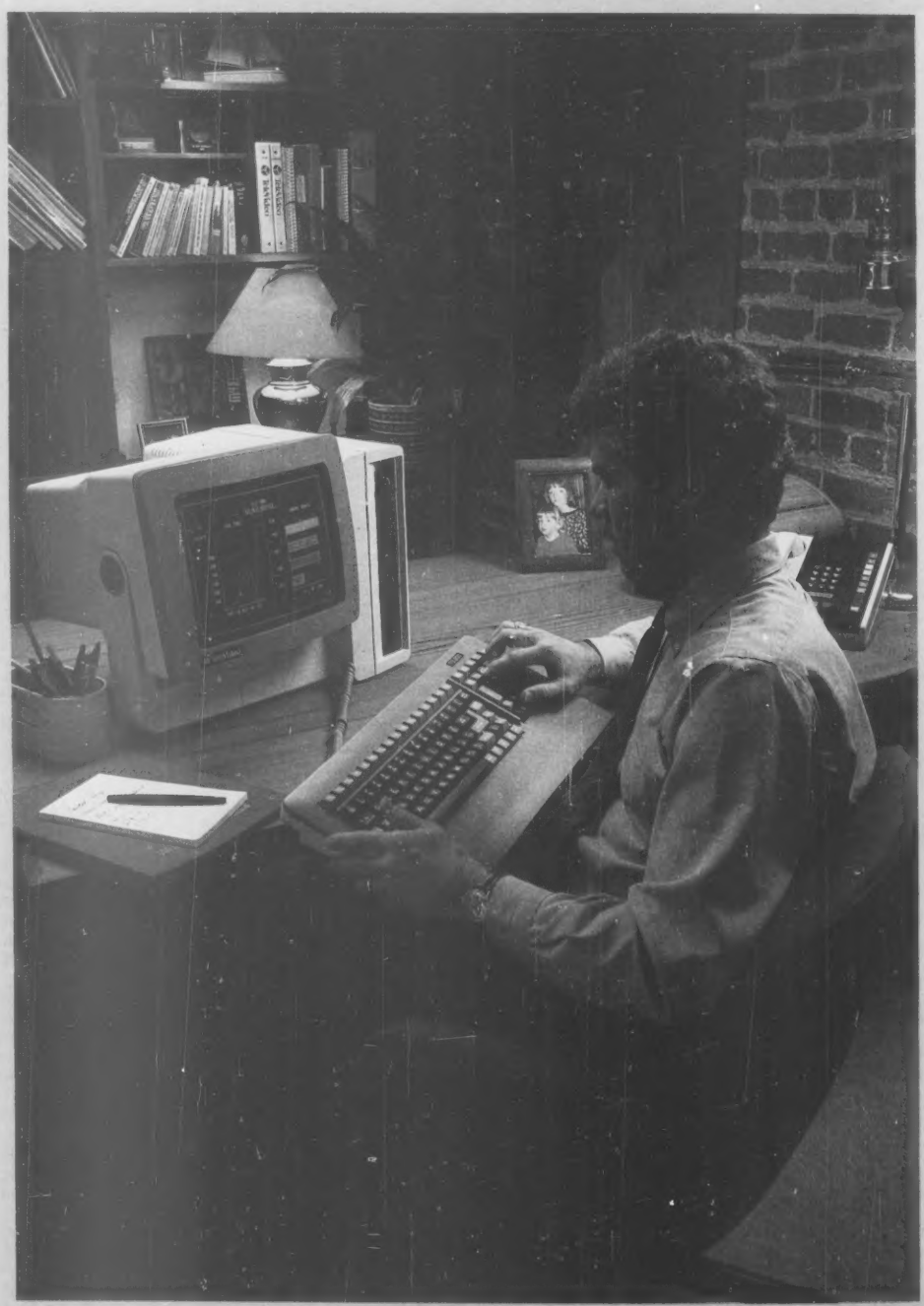
"There is a tremendous surge in departmentalized data processing and less reluctance among MIS managers to endorse micros," Passen said, noting that some DPers have simply realized that, for better or for worse, micros have become a fact of life.

"MIS departments can't respond quickly enough to the market [for microcomputer applications] that's evolved in the past year," noted Aaron Goldberg, a research analyst with International Data Corp.

Rather than resist the idea of opening up corporate data bases to micro users, Passen said many DPers are trying to make it easier for micro users to gain access to the host processor's data. One way of doing this is to develop the protocols and interfaces necessary to use the host processor's data in one of the many electronic spreadsheet or financial modeling programs currently available on the market.

A spreadsheet program transforms the computer into a giant electronic ledger sheet, allowing the user to work with a number of interrelated values such as inventory, payroll and sales. The user can change any of the

(Continued on SR/6)



Integration Of Micros

(Continued from SR/3)

quickly with minor economic impact.

Service support is another issue that must be resolved. Broken micros and peripherals must be repaired. Some organizations work out service arrangements with local dealers while many have an on-site repair service. The best arrangement depends on the company's size and how critical the system is to the overall operation.

Last of all, it must be determined who will purchase the microcomputers. Since they are relatively inexpensive, micros often fall outside the usual data processing equipment purchasing guidelines.

A potential problem exists when senior executives authorize microcomputer purchases for various departments. Aside from the obvious problem of buying systems that are incompatible with overall company plans, the company can lose money by not choosing to make bulk microcomputer purchases.

One solution is to create a central committee to approve microcomputer purchases. Another solution is to consider microcomputer purchases as a subset of the overall data processing configuration.

McMullen is vice-president of planning for Lee Data Corp.

Alternative to In-House Systems

Service Bureaus Link Micros to Mainframes

By Tom Henkel
CW Staff

Not all microcomputer links to mainframes are carried out through in-house systems. At least three service bureaus have announced services that offer microcomputer users access to data stored in mainframe data bases.

Control Data Corp., for example, is currently working with an in-house experiment linking the firm's 110 microcomputer to its Cybernet time-sharing network. While currently offered to six CDC offices, a spokesman said that the experimental program will be expanded to include more CDC offices and may eventually lead to a commercial product linking various micros to Cybernet.

Comshare, Inc. recently announced a management-oriented decision support tool called Distributed W that allows users of IBM's Personal Computer or Apple Computer, Inc.'s Apple II processors to access either in-house mainframes or Comshare's time-sharing network. In both cases, Distributed W provides a syntactically compatible microcomputer environment for data base mainframes running IBM's VM/CMS operating system, the firm said.

A smaller service bureau, Systems Analysis, Inc. in Bellevue, Wash., recently began offering a microcomputer link to its Burroughs Corp. mainframes using terminals based on Digital Research, Inc.'s CP/M and manufactured by ECS Microsystems, Inc.

The implication, some industry watchers contend, is that companies may be able to bypass the problems associated with connecting micros to in-house processing systems by using data bases and software offered by time-sharing services.

The CDC experiment, for example, is being used to transfer personnel data from 100 CDC field offices to the firm's Minneapolis-based headquarters. According to Rachel Townsend, manager of the project, a special software package called Cybernet Connect was developed to allow microcomputer files to be transferred to Cybernet.

Editing Advantage

The CDC 110 microcomputers replace terminals and tape cassettes previously used to enter personnel data. The advantage, Townsend said, is data entry personnel can now edit data. Before installing the micros, the host processor had to do all the editing, making data correction difficult, he explained.

Data transmitted from the field to headquarters moves at 1,200 char./sec over asynchronous telephone lines with full error checking and correction. Currently installed in six CDC branch offices, CDC plans to expand the program within the next 18 months to include 100 field offices, Townsend said.

One user of Comshare's Distributed W, Bank One of Columbus, Ohio, is using the package to perform financial modeling.

"Micro modeling is perfect for the development phase of business planning where we tend to do a lot of testing that can tax mainframe resources. But with many of our complex banking models, we must go beyond the two-dimensional outline afforded by micro systems. That's where the ability to communicate with a multidimensional product is helpful," according to Car-

(Continued on SR/8)

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Spreadsheets Provide Link to Corporate Data

(Continued from SR/4)
values on the spreadsheet, and the program will automatically recalculate all the other values. Such recalculations would take hours if done by hand; with an electronic spreadsheet, the time to perform these "what if" tasks is reduced to seconds.

"In a sense [downloading corporate data bases] doesn't depend on the micro being used, but on the terminal program written by a DP manager," commented Jack McGrath, editor of *SATN*, a technical journal for users of Visicorp's spreadsheet package, Visicalc.

Some companies have developed standard interface formats to accept mainframe data and merge it with a Visicalc file. Software Arts, Inc., which wrote the Visicalc program for Visicorp, offers a free-formatting program called DIF.

But employing the DIF format is not something the unsophisticated or nontechnical user would find convenient to do, according to Dr. Scott Cutler, manager of video systems at General Electric Co.'s research and development facility.

"Right now it's easier for us to get a printout [from a mainframe] and type the information into a micro" than to go through all the steps necessary to download the information to a micro and manipulate the data onto a spreadsheet, Cutler explained. What is really needed, he said, is a program that lets the user automatically download data to a micro with a simple command.

"A lot still needs to be done," Cutler noted. "There are more single unconnected micros [in large organizations] than advisable."

While electronic spreadsheet programs were not designed exclusively to access a mainframe, the large number of spreadsheet programs in use makes them an ideal choice for incorporating mainframe data into the micro environment. Datapro Research Corp., for example, predicts that more than a million spreadsheet programs will be in use by the end of 1983. That estimate includes the dozens of Visicalc-like programs that have come out since Visicalc was first introduced in 1978. Some of those programs offer enhancements to the original Visicalc and support varying operating environments.

In addition, newer, so-called "integrated packages" may overtake the spreadsheet and other stand-alone application packages in the business and professional marketplace.

With stand-alone packages, users wanting to do more than one application on their personal computers are often limited by inconveniences such as having to swap disks and remembering different commands because the user interface is rarely identical between different packages. They may also have to go through the relatively time-consuming process of integrating different kinds of data onto one document, such as spreadsheet data onto a graph, noted Mitchell Kapor, president of Lotus Development Corp. (LDC) in Cambridge, Mass.

LDC's integrated package, 1-2-3, uses the same command structure for all of its applications and allows the user to manipulate text, graphics and/or data onto one document or screen if desired.

A similarly integrated package called MBA is available from Context Management Systems. Apple Computer, Inc.'s recently announced sophisticated workstation, called Lisa, also includes a number of different application programs in an integrated format.

Needle is East Coast editor for **InfoWorld**, *a weekly newspaper for microcomputer users.*

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Programmer Aids Abound

Micros More Than Ready for Mainframe Shops

By Max A. Lebow
Special to CW‡

Only a few years ago it would have seemed foolish to suggest that a mainframe shop, housing literally megabytes of main memory and executing millions of instructions per second, might need and use microcomputers and their applications software. Programming for the first S-100 microcomputers before the advent of well-tested microcomputer operating systems was the pastime of avid hobbyists and experimenters only.

When the S-100 did what was required, the programmer gave a triumphant whoop and a long sigh and then usually returned to the kitchen table to write additional subroutines in assembler language that would make the machine easier to program.

Today, programmer aids for microcomputers run the gamut from symbolic assemblers and cross-reference utilities for higher level languages to full-blown application generators. Furthermore, the best of these microcomputer applications would make the boys in the DP shop proud — if they were not so afraid the little machines were going to cost them their loyal customers — and their jobs.

Three Categories

Microcomputer software designed for use in mainframe shops basically falls into three broad categories:

• Software that performs housekeeping and management functions for the DP center (such as project management or project costing for software development) and does not require the full computing power of a mainframe.

• Communications software that allows the microcomputer to function as a terminal of the mainframe system.

• Applications that replace minor end-user functions (such as departmental budget projections or reports) and do not require the capabilities of a mainframe.

Before introducing a microcomputer and its software into a mainframe shop, several technical and managerial issues should be considered that will help ensure a smooth operation. Since the issues are somewhat different for each category of use, what follows is a more detailed description of the category, examples of packages available to fulfill that function and a discussion of the issues to be considered.

• *Housekeeping and Management Functions.* This is a relatively new application area for the microcomputer, and there are only a few packages available. Examples include Estimacs from Management and Computer Services, Inc.; Slim from Quantitative Software Management, Inc.; and Information from Informatics General Corp.

The first two products help mainframe software developers plan and execute complex programming projects. Slim has been in use for about four years, mainly in large commercial and government installations. It runs on the Hewlett-Packard Co. HP 85. Estimacs was introduced in September 1982. At that time it had about 100 users among half-a-dozen corporate clients.

Although they share the same overall purpose, Slim and Estimacs differ in their approach to software planning and cost estimation. Slim uses the Program Evalu-

(Continued on SR/12)

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Demand Growing Among Users

Multiuser Systems Increase Data Base Access

By Lew Gaiter III
Special to CW‡

The great interest in applying microcomputer systems to business and professional settings has been a significant element in the explosive sales of so-called personal computers. This phenomenon has been accompanied by a somewhat slower, but nonetheless growing, realization that in most business or professional applications, a single-user configuration, while helpful, soon reveals inadequacies.

Prominent among these deficiencies are the problems that arise with the installation of a second or third microcomputer in the same setting. Information is not accessible in a way that takes full advantage of the computer's capabilities. Files of presumably identical data age at different rates and require updating periodically.

Subsequently, many microcomputer users have begun to feel a need to link free-standing, single-user computers to assure easy access to a common data base.

With the introduction of data base management systems, increasingly powerful microprocessors and better insight into the potential of computers, more and more users are calling for multiuser systems.

A number of manufacturers have recognized this growing demand, and a number of such systems are currently available on the marketplace. As more manufacturers enter the market, a greater range of choices between technologies, hardware configurations and software capabilities can be expected.

A multiuser system is a computer system that allows more than one user or user program to access the same data base of information or peripherals simultaneously. This type of system allows several users simultaneous access to the same disk, printer or communications capability between separate processors or tasks.

A practical application for a multiuser system can be illustrated by what happens when two people use an accounting package on the same computer. While one user works in a general ledger program, the other processes information or data in the accounts receivable program. Both are able to access the same information, that is, an invoice, as well as communicate with one another on a particular section of the program being used.

Several techniques are used to accomplish this goal.

'Scheduling is the first step in the development of . . . multiuser systems. Scheduling is the method used by the CPU to decide which task it will execute first and how much time it will allot for the execution of that task.'

Two of the most popular types of multiuser systems on the market are the single processor time-sharing system and the networking system.

A single processor time-sharing system utilizes only one CPU to process several tasks or programs for various users.

Each task receives a specific amount of time — a time slice — for processing. A task resides either in a certain portion of shared memory or, alternatively, on the disk and the CPU time slices between tasks. In this fashion, tasks are completed one at a time.

The networking system links several single-user systems together through a communications interface. These systems communicate with each other either over a coaxial or over another type of cable that enables very high-speed data transfer between processors. This approach allows more than one user to access the same data base and provides the capability to utilize data located at physically separate locations.

The multiprocessor system generally uses a high-speed bus to tie several users or processors together. It contains one processor that is known as the system manager or the master CPU. This is a stand-alone CPU whose function is to handle most of the mass storage, resource communications and all printer and bus communications. Any users wishing to communicate across the bus or access any mass storage or printers must communicate through the master CPU.

In order to obtain a computer that meets the needs of the market, several things must be considered when designing a multiuser system, such as processor size and speed and hardware/software compatibility.

Suggested here are a few brief design proposals for each of the single processor time-sharing, networking and multiprocessor systems.

Scheduling is the first step in the development of this approach to multiuser systems. Scheduling is the method used by the CPU to decide which task it will execute first and how much time it will allot for the execution of that task.

One method of deciding how much CPU time will be set aside for a given task is to have some type of interrupt occur at a constant interval. The time between two such interrupts is called a time slice, while the interrupts themselves are called ticks. Each task is assigned a certain

(Continued on SR/10)

Bureaus Offer Micro, CPU Link

(Continued from SR/5)

ol Fidler, Bank One's financial administrator and financial planner.

Systems Analysis, Inc.'s service is aimed primarily at small banks that use the firm's Burroughs mainframe to perform a variety of banking functions, according to Dean Sutton, vice-president and DP director at Systems Analysis.

Systems Analysis customers use ECS Microsystems 4500 terminals with dual 5¼-in. disk drives or a larger 4650 terminal with a 10M-byte hard disk subsystem. The terminals accept large data bases that are downloaded from the host system.

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As Demand and Complexity Increase

Few Standards Available in Micro Market

By Rod Canion
Special To CW‡

As data processing managers confront the problem of deciding which personal computer they should use, many are finding the choices more limited than they expected. Even with several hundred kinds of personal computers on the market today, very few meet the exacting and unique demands of the corporate environment. Those that do are rapidly setting standards in the marketplace for users and vendors alike.

Before IBM announced its 16-bit IBM Personal Computer in August 1981, executives and managers had already started acquiring home computers and adapting them for a variety of specific business uses. Often, individuals discovered how much time could be saved by using Visicorp's Visicalc or one of the other spreadsheet programs. Others discovered the benefits of word processing.

Because they were confined to the first generation of 8-bit personal computers, some users quickly ran up against the limited storage and computational capabilities of their machines. Those who looked forward to the day when they could integrate their personal computers into the larger corporate DP environment were quickly disappointed.

Ill-Equipped for Survival

For several reasons, 8-bit personal computers were ill-equipped for survival in the world of big business. Among other things, the corporate world demands power, functionality, expandability, availability of software for a wide variety of business applications and ergonomic features such as ease of use, a readable display and attractive styling. Unfortunately, most 8-bit machines failed to satisfy one or more of these critical requirements. The IBM Personal Computer and a limited number of pacesetters in the 16-bit generation, on the other hand, have pushed the limits on these requirements to a new level and have raised users' expectations.

The new generation of business software requires more memory and computing capabilities than the first-generation machines could provide. Many packages require a minimum of 128K bytes of random-access memory and are capable of handling more data stored on double-sided floppy disks and Winchesters than the 8-bit machines.

These second-generation software packages for 16-bit machines also provide greatly enhanced capabilities that make personal computers useful for whole new classes of business people. For example, innovative products, such as Software Arts, Inc.'s TK1Solver and Lotus Development Corp.'s 1-2-3, run only on 16-bit machines. And they are primarily developed to run on the IBM Personal Computer.

Just as important as computing capability is the ability of the hardware to grow along with the user's maturing DP needs. Because the new generation of hardware is capable of a sometimes surprising degree of expansion, it is the first equipment that is truly useful on a broad scale in large-company settings.

It is becoming increasingly easy to integrate these machines into local-area networks, to set up sophisticated, but simple links with mainframe data bases and to work with advanced modeling and forecasting programs that require extensive color graphics capabilities.

Because the second-generation hardware fits so well into the corporate environment, more business packages are being produced to meet an insatiable demand for new business applications. And so far, most of that new software is being written for the IBM Personal Computer.

Because IBM is already a strong influence in the market and its personal computer is so well-suited to the large-company environment, most of the second-generation software has been developed for the IBM machine.

So much software has been developed for the IBM microcomputer that it is rapidly setting the hardware and software standard for business and professional users of second-generation personal computers. Moreover, that standard is rapidly taking on a life of its own, independent of IBM. Today, virtually every important business application program is available for use with the IBM Personal Computer.

It is no surprise, then, that a number of vendors have introduced personal computers that are to varying

(Continued on SR/14)

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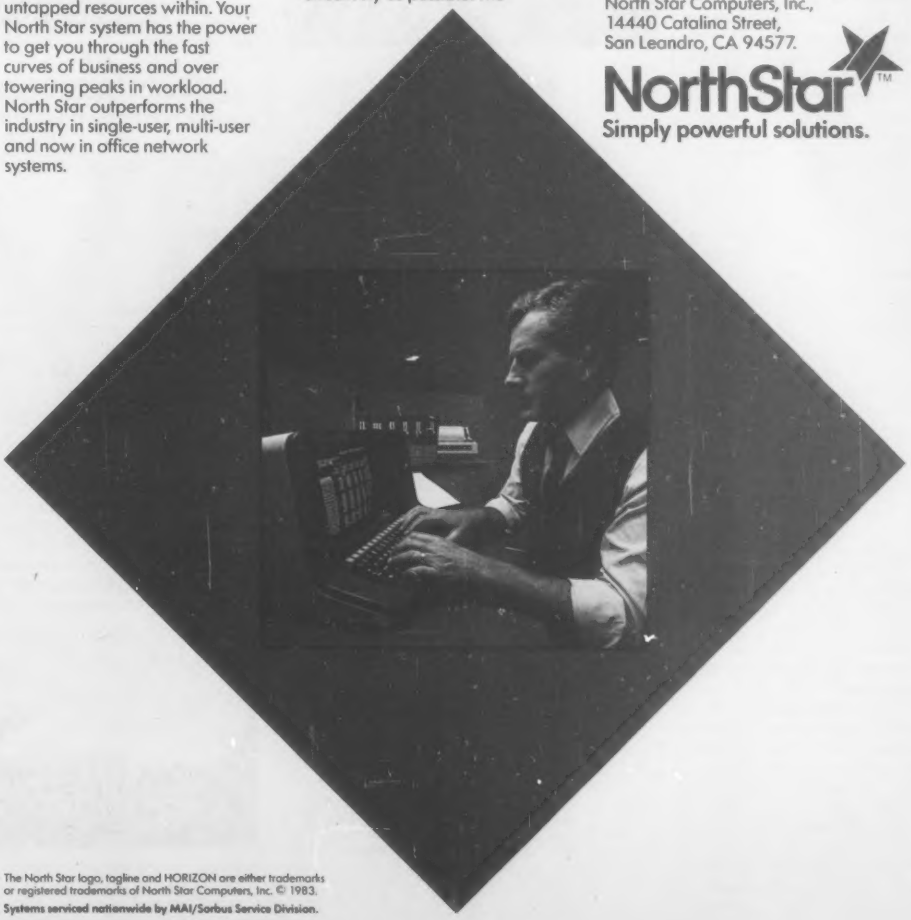
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Multiuser Systems Fill Data Base Access Needs

(Continued from SR/8)

number of ticks for its execution, after which it must give up the system and let another task run.

In designing a scheduler, the priorities of specific tasks need to be considered. A user requesting file information is not considered to be performing a high-priority task. Therefore, the user does not require a large number of ticks.

However, the buffering and disk systems are high-priority tasks, justifying more ticks and a longer time slice for their completion. These tasks need a high-priority rating to keep from being rolled out because of some low-priority task, such as reading a file record.

There is more than one way to ensure that high-priority tasks get either a longer time slice or a higher number of ticks. The currently popular design solution provides for each task to receive a certain amount of time, for example, 1 to 4 msec, to access the processor.

Immediately after rollout, high-priority tasks are placed at the front of the task queue and are reexecuted after they roll out. This means that high-priority tasks receive several sequential time slices. Even though this is sufficient for the need, this is not the most efficient design approach.

Alternative Approach

A variable interrupt timer is an alternative approach to the design mentioned above. It allows higher priority tasks or routines a longer time slice to finish a task before being rolled out.

For example, a routine requiring 3 msec to finish might be assigned a single 4-msec time slice instead of three 1-msec time slices and would not roll out until it was finished.

Thus, the actual time required to finish the task would be 3 msec instead of 3 msec plus the scheduler processing time.

Memory management routines are a must in a time-sharing system. These routines decide which task resides in a specific part of memory and how to swap tasks in and out to disk.

These routines also provide a shared space for user-to-user or intertask communication and keep the users' programs from getting confused.

The memory management system must be a finely timed combination of efficient hardware and software. Information about the total memory size needed by the program, as well as where and how these memory requirements may be segmented, needs to be included with each task.

In this manner, the scheduler is provided with sufficient information to keep intertask collisions from occurring. Having the memory management scheme and the devices access the same CPU allows accurate task communications to keep user tasks straight and helps to avoid confusion between user tasks.

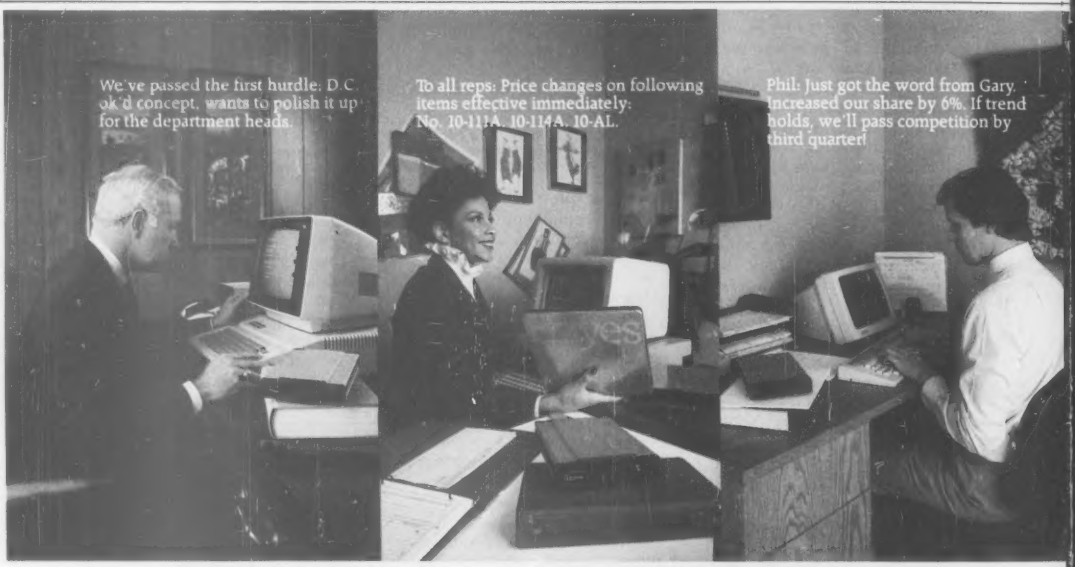
The communications buffers are important parts of the memory management system. These buffers transfer information from task to task. This information is then placed in the intertask communications area, and the buffering system is called.

From this point, the buffering system looks for that sector in a disk buffer, and if it is there, the information that is in the buffer is transferred to the file system.

If the requested sector is not in a disk buffer, the information is placed in the intertask communications area and then the disk system is called to move the requested information into a disk buffer.

In a multiuser networking

(Continued on SR/11)



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Hayes

The age of the single station microcomputer is over. Sooner, rather than later, the 8- and 16-bit computers scattered throughout your company will need to communicate. And once personal computing extends beyond the desktop, it can present the DP/MIS staff with a tangle of mis-matched hardware, user-hostile software, and a situation that can quickly get out of hand.

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Hayes Smartmodems are available at two different speeds and price levels. The lower-priced Smartmodem 300 is ideal for local data swaps and communicates at 300 bps. For longer distance and higher volumes, Smartmodem 1200 transmits at 1200 bps or up to 300 bps, with a built-in speed selector that automatically detects transmission speeds.

We've also included indicator lights that let users see what their Smartmodem is doing, while an audio speaker lets them hear it. (Is the remote system down, or was the line just busy? This way, they'll know.)

Hayes has prepared a directory of the many communications pro-

Multiuser Systems Need Fail-Safe Data Security

As with any useful tool, multiuser systems have certain disadvantages that must be taken into consideration along with their advantages.

Some of these disadvantages include the need to provide some form of data security, a tendency in some configurations for reduction in speed as the number of users increases and a necessity for a fail-safe mechanism to prevent the errors of one user from negatively affecting the entire system.

Interference Protection

In the area of data security, the user of an applications program needs to be assured that data placed into the system is protected from interference or unauthorized access. This includes, but is not limited to, a need for some form of record and file locking, a mechanism that prevents more than one user from accessing the same point in a file accidentally.

One such safeguard assigns an account for each user on the system. This makes it possible to store and protect any sensitive data or information from unauthorized tampering.

The problem of reductions in system speed is usually resolved by buffering mass storage data transfer requests. This method improves system response times by allowing multiple users to access the same data with a minimum amount of mass storage activity.

On the multiprocessor and network multiuser integrations, speed degradation is not a serious concern since each user has a separate CPU that allows individual processor-dependent tasks to run as fast as they would on a conventional single-user system.

Multiuser systems are normally very stable. With the multiprocessor implementation, reliability is enhanced since it is possible for one user to fail without disturbing the rest of the system.

User Access Increased

(Continued from SR/10)

computer system design, a number of independent computers are linked together through some type of cable that acts as a communications bus. There is only one CPU used in accomplishing any given task.

Each user has a CPU, disk storage and file system. Assuming there are six users, a networking system would contain six CPUs, six disk storage units and six individual file systems.

Any of these six users can communicate with any of the other five users. It is obvious there is mass replication of resources with this kind of system.

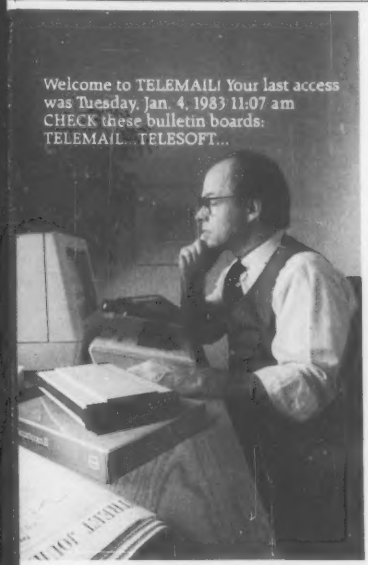
Each user runs independently in a manner that allows any user to interrupt any other user. Interrupts and multitasking are used for system efficiency. They are also used to help keep individual CPUs from locking up.

The advantage of a networking system is that one CPU is able to access a multitude of data bases while running programs specific to that particular user.

The greatest disadvantage of the networking system is the mass replication of I/O resources and many other components of the system.

Furthermore, it would be economically and operationally more advantageous to have one disk, one file system and one master to handle these functions.

Gaiter is a former software engineer at OSM Computer Corp., located in Santa Clara, Calif.



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Smartmodem Specifications
Low Speed Data Format: (Smartmodem 1200 and Smartmodem 300) Serial, binary, asynchronous 7 or 8 data bits, 1- or 2-stop bits, odd, even or no parity.
High Speed Data Format: (Smartmodem 1200) Serial, binary, asynchronous, 7 data bits with even, odd, or fixed parity; or 8 data bits and no parity.
Dialing Capability: Touch-Tone and rotary-dial pulse dialing.
Commands: (unnecessary with Smartcom II software) A: Immediate answer. A/: Repeat last command. C: Transmitter Carrier. D: Dial command, including simple dialing, waiting for second dial tone, auto-dialing and other features. E: Local echo. F: Full/half duplex. H: Switch hook. M: Audio monitor. O: On-Line. P: Pulse dialing. Q: Quiet mode. R: Reverse originate/answer. S: 17 "Set" commands allow user to select various operational parameters, such as dialing speed, escape code character, number of rings to answer on, etc. S?: Checks operational parameters above. T: Touch-Tone dialing. V: Verbose result codes.
Result Codes: (can be numerical/verbose): 0/OK: Command line ok. 1/Connect: Carrier detected. 2/Ring: Phone is ringing. 3/No Carrier: Carrier lost or never heard. 4/Error: Error in command line. 5/Connect 1200: Carrier detected at 1200 bps. (For Smartmodem 1200 only.)
Audio Monitor: Two-inch speaker with volume control.
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Micros Ready to Challenge Mainframe Shops

(Continued from SR/7)

ation and Review Technology methodology for project management and implements a model of the software life cycle using linear programming and simulation. Estimacs uses the decision support approach to generate alternate estimates refined through "what-if" analysis of design trade-offs. Both systems are based on extensive data gathered from actual software project implementations.

Vector Graphic, Inc.'s Milestone project planning package can also be used to plan software projects. It is much cheaper than Slim or Estimacs, but lacks their software-development-specific data bases.

The specification of Informatics's data base management system Mark IV reports is one particular task in many mainframe shops for which microcomputer applications software is now available. The software for this is presently bundled into a system that Informatics calls Informaticom. This package also includes software for transferring files from the mainframe to the microcomputer and back again.

Informaticom leads the user through the process of entering information required for the various Mark IV report specification forms. File description information required to fill out some of these forms can be called up to the microcomputer screen to help with the specification process.

Before housekeeping/management applications are installed, several issues ought to be addressed. Does the microcomputer have the capacity to handle the number of activities involved in managing the project? Are the data bases used in the estimates still current? Does the data reflect recent developments in applications generators and other programming tools? Can the microcomputer process the information required in the timely fashion necessary for prompt implementation of management policies? Is the data required to plan or estimate the cost of a project already stored somewhere in the mainframe file system? If so, can the information be conveniently transferred in a form usable by the microcomputer application?

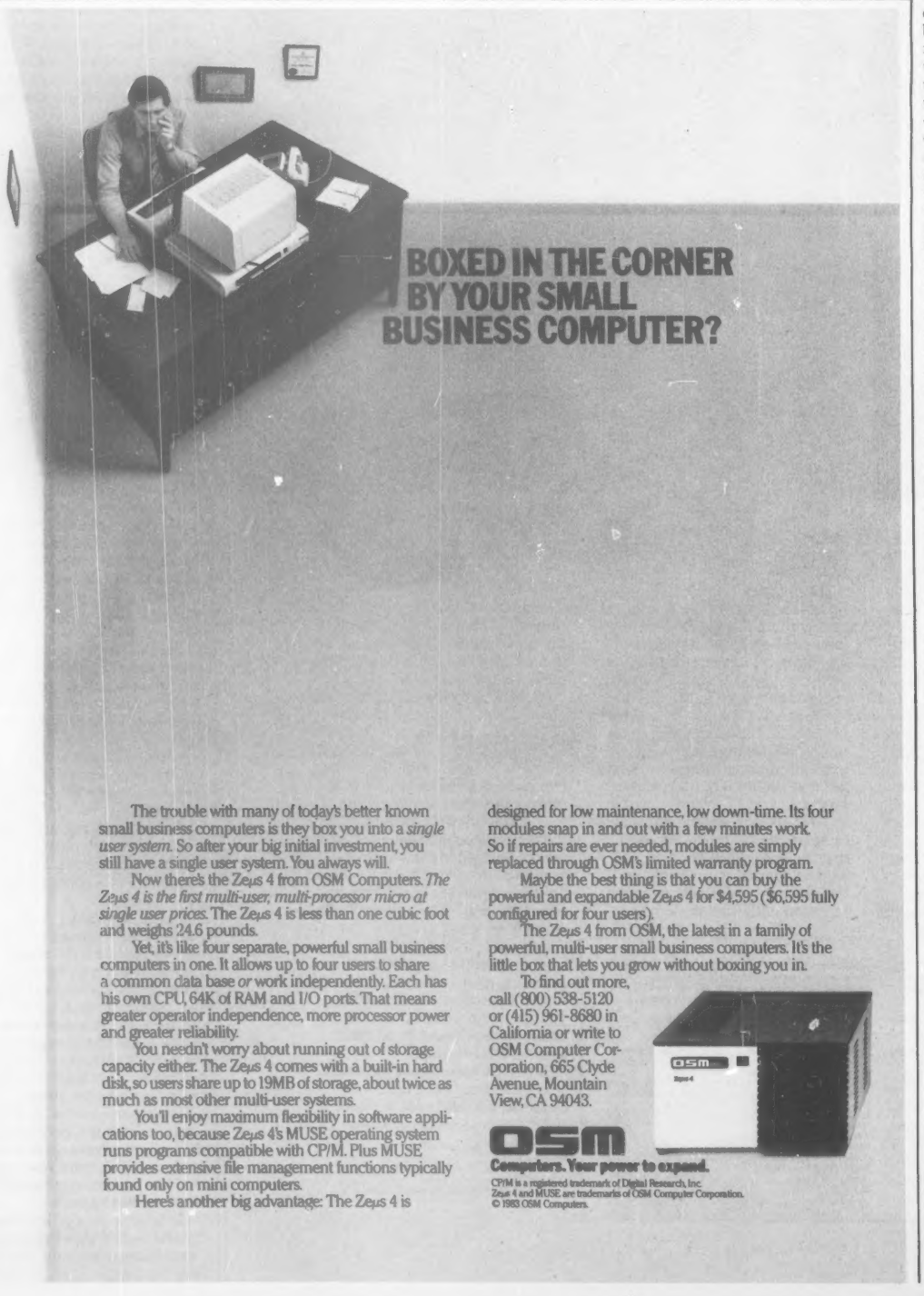
Once these technical questions are answered satisfactorily and the system is installed, personnel issues may arise. Will veteran DP personnel accept information from a microcomputer? Will the microcomputer be seen as a double villain, taking work from mainframe programmers and setting unrealistic work quotas for them?

• *Communications Functions.* Communications software for emulating a remote terminal exists for most of the major microcomputers. These are the programs that allow home computer users to connect to various network services. Also in this functional category are local-mode terminal emulators.

Generally speaking, communications software for microcomputers is becoming more elaborate. Recently released products in this category include Management Science America, Inc.'s Peachlink and Orion Research, Inc.'s Interface/34. One step beyond this is an interface package allowing transfer of data from Data Resources, Inc.'s statistical files to microcomputers running Visicorp's Visicalc.

Issues that should be considered before bringing communications software in-house concern the user interface and the compatibility of the microcomputer with the mainframe. Will the software allow the host and microcomputer to perform as an efficient host-terminal pair? Does the microcomput-

(Continued on SR/14)



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To our Computerworld readers;

The Special Report on Micros in Big Business you're reading now is another part of the expanded coverage Computerworld has been giving to Micros over the last year or two. This expanded coverage reflects the increasing involvement of Computerworld DP/MIS readers with microcomputers on the job.

Research from International Data Corporation, the country's largest computer industry research firm, shows that large computer-using organizations are using more and more micros in their companies. This research is borne out in an annual reader profile study conducted by the Computerworld Market Research Department. This study shows that more than half of Computerworld subscribers are personally involved in the purchase process of microcomputer equipment and software for their organizations or the organizations for which they are consulting.

Since Computerworld's goal is to serve its readers with all the information they need to do their jobs better, Computerworld's editorial coverage has expanded to meet this ever-increasing interest and involvement of DP/MIS professionals with micros and micro software. And our Market Research Department tells me that Computerworld subscribers prefer the micro coverage they find in Computerworld to the micro coverage available in any other publication serving the DP/MIS field. If you're not a Computerworld subscriber, your subscription to Computerworld can bring this same effective coverage directly to you, fresh each week.

Best regards,

W. Walter Boyd
President

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Standards Are a Problem in the Micro Market

(Continued from SR/9)
degrees compatible with the IBM Personal Computer. These second-generation systems, however, must satisfy another set of needs in order to be widely accepted in the corporate environment. They must meet significantly higher levels of expectations from nontechnical business and professional users than from the more forgiving hobbyists or do-it-yourself programmers of the past.

Business users — whose only previous contact with video display terminals was with their color television sets — demand high-quality, high-restoration displays. They expect graphics display capabilities along with high-resolution, uppercase and lowercase alphanumeric character sets.

These new users expect programs to be extremely fast and to work interactively. They also expect programs to be designed for nontechnical users, with plain English commands and extensive Help facilities — all of which require the increased memory and processing power available in the IBM Personal Computer and some of the other 16-bit, second-generation machines.

Many also expect to be able to integrate their systems into local-area networks or into corporate data bases so they can work with common sets of information when analyzing variables of business decisions. Such integration of personal computers into corporate management information systems is not widespread, but it is something the second-generation systems will be capable of supplying.

This rapid acceptance and integration of 16-bit, second-generation personal computers into big corporations has paved the way for a vastly increased number of new users performing thousands of new applications.

Canion is president of Compaq Computer Corp. in Houston.

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Micros Are On the Move

(Continued from SR/12)
er's output produced under the software meet the installation's communications standards? Does the microcomputer have function keys that can be used conveniently to utilize features of the software that call for function keys?

There is at least one important personnel issue that may arise after the system is installed. What proportion of the connect time made possible by the software is actually being spent on the purpose for which the microcomputer and software were intended? Second of all, nonproductive uses of the microcomputer include the running of game software, the connection to network services other than those intended and, in the case of mainframes running older communications software, the reprogramming of the microcomputer to attempt a breach of security.

• *End-User Functions.* According to the producers of microcomputer software applications, every commercially successful microcomputer software application is in some sense a replacement for an end-user function that did not require the full capabilities of the mainframe. Examples of such successful packages include Micropro International Corp.'s Wordstar, Visicalc and Ashton-Tate's Dbase II.

The primary issues that should be considered before cutting an application loose on a microcomputer are maintenance, control and data integrity.

Lebow is a regular columnist for United Press International and a microcomputer consultant based in Philadelphia.

Connecting Micros To Major Networks

By Charles Morel
Special to CW‡

IBM's Personal Computer can be connected to a large host network in a number of ways. Unfortunately, IBM does not currently provide systems software for large host networks to support the Personal Computer as an intelligent device.

To connect the Personal Computer to a network, the microcomputer must emulate another device. The four major emulators are a start/stop terminal emulator, a protocol converter, an IBM Systems Network Architecture (SNA) 3274 emulator and emulators of IBM 3278 or 3279 CRT terminals.

Economy and ease of use are the most practical criteria when selecting an emulator. The cost of a given emulation technique can be divided into direct, recurring and hidden categories.

Direct costs are those associated with the acquisition of hardware and software components required to effect the physical path between the Personal Computer and the host. Recurring costs include maintenance, lease costs and fees associated with the physical path. Hidden costs can be thought of as a subjective judgment of the relative usefulness or utility of the emulation function to the Personal Computer user.

Start/Stop Emulation

Start/stop terminal emulation by the Personal Computer is the most familiar connection technique. Figure 1 depicts the connection of the Personal Computer to a host through two IBM 3705 communications front-end processors. One 3705 is running IBM's Advanced Communications Function/Network Control Program (ACF/NCP) with IBM's Network Terminal Option. The second 3705 is running IBM's Emulation Program emulating an older IBM 2700 series communications processor.

When determining the direct cost of this connection, factors like the emulator software, a serial port, an asynchronous modem and telephone charges directly affect the Personal Computer. In addition, telephone charges to include a rotor or hunting group, asynchronous modems, line set costs on the front end, software memory resource requirements in the front end and software license fees directly affect the host.

In any case, start/stop terminal emulation is probably the least expensive way to connect the Personal Computer to a host processor. However, this method has several drawbacks. Delays because of busy lines, operators' difficulty in establishing a host connection and single-line interactions are some of the most glaring problems.

The Personal Computer can be connected to a protocol converter. The protocol converter emulates a remote 3274 cluster controller to the 3705 front-end processor. The protocol on the communications link can be binary synchronous or SNA/Synchronous Data Link Control (SNA/SDLC). The Personal Computer emulates a start/stop terminal and communicates with the protocol converter over a switched or leased asynchronous line.

When determining the direct cost of using the protocol converter, essentially the same elements must be considered with the Personal Computer as under a start/stop emulator. At the protocol converter, the following components should be pro-

(Continued on SR/16)

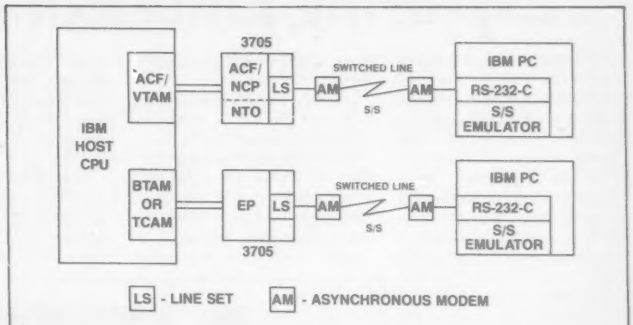
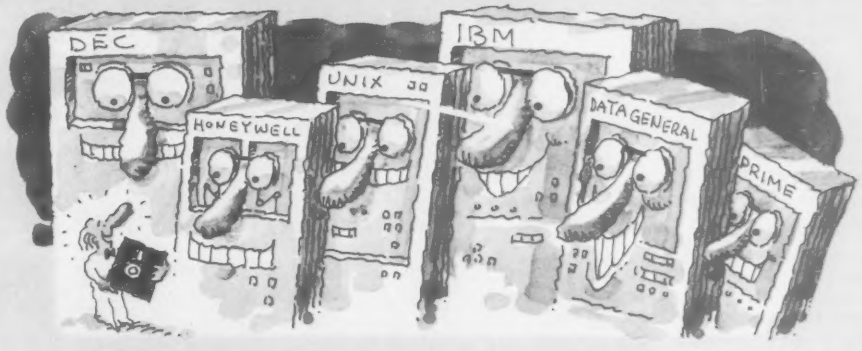


FIGURE 1: START/STOP EMULATOR

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Exploring Emulator Alternatives for Linking

(Continued from SR/15)

rated according to the total population of terminals that will have access through that particular converter: telephone charges to include a rotor or hunting group, asynchronous modems to communicate with the Personal Computer, asynchronous port costs on the protocol converter and synchronous modems for communication with the host front end.

Again, the costs at the host front end should be prorated for the following: the telephone line, the synchronous modems for communication with the protocol converter, the line set on the 3705 and the memory requirements in the ACF/NCP to support either the Binary Synchronous Communications (BSC) or the SNA/SDLC protocol.

The maintenance cost of a protocol converter configuration is an important factor since the number of physical components are proportionally higher per terminal or micro than other alternatives.

Additionally, protocol converters using SNA/SDLC can be impacted due to changes to the SNA protocol affecting maintenance costs.

Full-Screen Capability

The protocol converter provides the Personal Computer with full-screen capability and permits the multiplexing of Personal Computers to the host front end.

However, when the type of asynchronous line is switched between the micro and the protocol converter, drawbacks arise, as described in the start/stop emulator discussion.

The third technique emulates the 3274 Model 51C with attached 3278 Model 2 keyboard/display and 3289 printer.

An example of this form of emulation is the IBM SNA 3270 package, which runs on the Personal Computer. This package allows the micro to connect to the host front end as an SNA/SDLC cluster controller and terminal.

The telephone connection is either switched or leased. A leased connection can be multidropped, which means the line can be shared among multiple Personal Computers and/or other SNA/SDLC controllers.

The following direct costs relating to the Personal Computer should be considered when evaluating this form of connection: the SNA 3270 hardware, the SNA 3270 software, the synchronous modem and telephone service.

At the host front end, costs are about the same as with the protocol converter.

It should be noted that the SNA 3270 package is limited to a single user per Personal Computer and only the line resources can be shared between Personal Computers. Synchronous modems are expensive and at the higher transmission rates, the modem cost could exceed the cost of the Personal Computer itself.

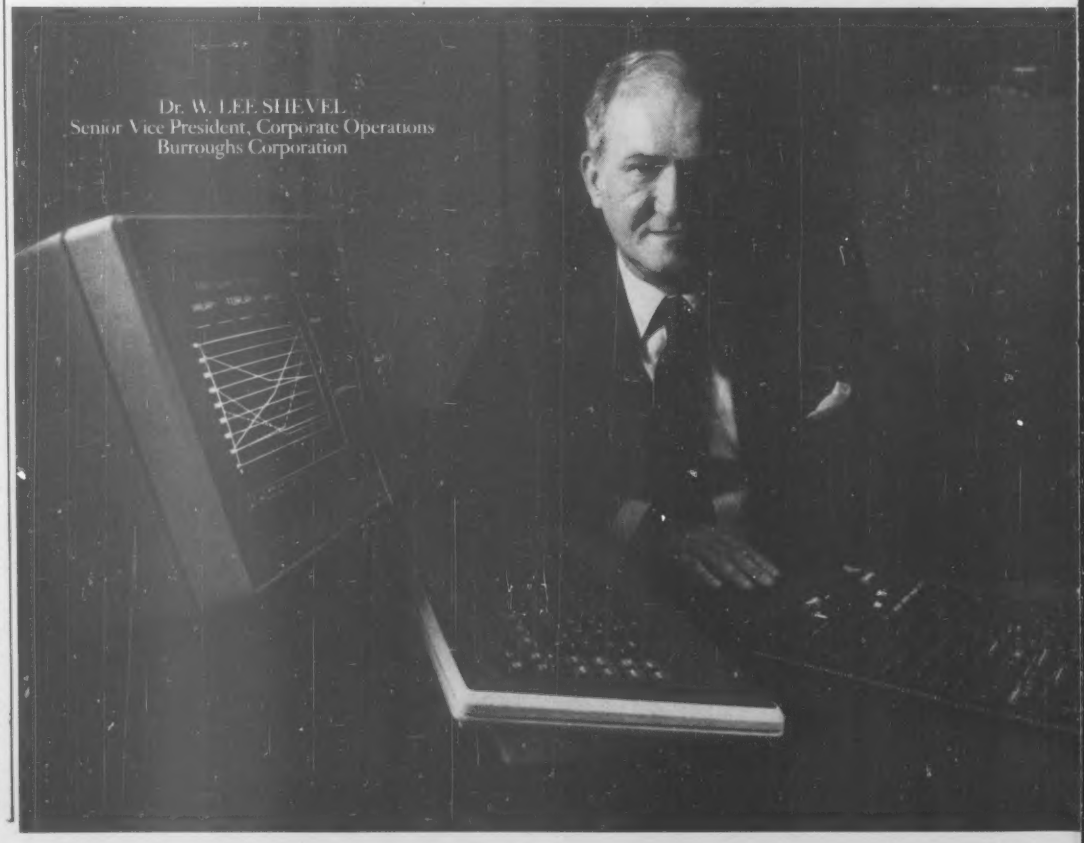
Since each Personal Computer supported in this manner requires a synchronous modem for its exclusive use, this is one of the more expensive alternatives.

The network maintenance associated with this method is also expensive because of the small number of users over which the costs can be prorated.

Even though SNA is a relatively volatile protocol, there would be little concern that IBM's SNA 3270 package on the Personal Computer would not be kept current.

The SNA 3270 package provides the Personal Computer with full-screen capability and permits direct use of the Personal Computer printer by host applications. When the type of synchronous line is switched between the Personal Comput-

A TESTIMONIAL FOR THE BURROUGHS B20 FROM SOMEONE WHO SPENT 17 YEARS AT IBM.



Personal Computers to Large Host Networks

er and the host front end, those drawbacks normally associated with dial-up lines come into play again.

A form of connection that has recently become available permits connection of the micro directly to the coaxial cable of an IBM 3274/3276 cluster controller.

One example of this type of connection is Pcox, a product of CXI, Inc. This type of connection requires the addition of hardware and software in the Personal Computer.

A Personal Computer with a 3278 or 3279 emulator can be used in any network configuration where a 3278 or 3279 would be appropriate. This method can be used to connect the Personal Computer to 3274s that are channel-attached to the host system.

Also, 3274s or 3276s can be remotely attached using BSC or SNA/SDLC protocols through the front end. The ability to connect directly to channel-attached 3274s distinguishes this method.

The direct cost in this case includes the 3278 or 3279 emulator hardware and software associated with the Personal Computer. The cost of the 3274 or 3276 should be prorated over the number of terminals and Personal Computers connected to the cluster controller. These are the only costs for Personal Computers connected to channel-attached 3274s. For remote 3274s or 3276s, the synchronous modem and the line cost must also be prorated.

Additionally, costs at the host front end are prorated over the terminals and Personal Computers sharing those facilities and should include a telephone line, a synchronous modem, half of the 3705 line set and the memory requirements in the ACF/NCP to support the SNA/SDLC protocol.

Maintenance Minimal

The network maintenance required for 3278 or 3279 emulators is minimal since that maintenance is prorated over the terminal base on the existing 3274s or 3276s, which can support up to 32 devices.

Full-screen capability is provided by Pcox and similar 3278 or 3279 emulators on channel attached 3274s or remotely attached 3274s 3276s.

Since the 3278 or 3279 emulators can be connected to the cluster controllers under IBM Personal Computer program control, effecting connection to the host system is as simple as running the appropriate 3278 or 3279 emulator software in the Personal Computer.

All of the above connection techniques permit the Personal Computer to connect to the host, perform the necessary interactions and return to local operations by disconnecting from the host.

Each method has distinguishing properties that would make it appropriate for certain environments. The large installed base of IBM host computers and the rapidly expanding population of IBM Personal Computers offer an attractive opportunity to benefit from interconnection between the two.

Morel is president of CXI, Inc. of Los Altos, Calif.



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Execs Access CPU's Data at Home With Micros

By Charles J. Aaron
And Bruce J. Goodman
Special to CW‡

Metropolitan Life Insurance Co. of New York had been toying for about two years with the idea of giving its executives access to data stored in the company's mainframes when IBM announced its Personal Computer. Already in the process of developing an experimental management workstation program, the firm decided to incorporate the Personal Computer into its experimental program.

Metropolitan's pilot program involves 12 executives, most of whom use IBM 3279-type terminals connected directly to the firm's 3081 mainframes. There are five 3081s at Metropolitan, but for the experiment, the executives are tied to one 3081 dedicated to CICS applications.

In addition, the executives can access an IBM 8100 distributed processing system directly through the 3279 terminals to handle large word processing operations. The 8100 processor uses a DPCX operating system while the 3081 mainframes use IBM's MVS and VM operating systems.

For the workstation experiment, a CICS application was developed to provide an automated in-basket and call-up system incorporating both a memo-generation facility as well as an electronic mail feature.

Early on in the project, it became evident that the executives might want the same basic features of the CICS system available at home as well. At this point, the decision was made to duplicate the CICS application on the IBM Personal Computer, and subsequently micros were installed in the executives' homes.

A program was written to allow the Personal Computer to emulate an IBM 3101 CRT terminal. Communications to the 3081 host are carried out through one of two gateway processors — either an IBM Series/1 or a Honeywell, Inc. Level 6 minicomputer. Two Personal Computers were installed in the office to assist in solving any problems with the system.

Communications to the mainframe take place over a 1,200 bit/sec modem through the gateway processor, which is necessary because of the fundamental communications incompatibility between the Personal Computer and IBM's mainframe CICS environment.

Using the Personal Computer at home is virtually identical to using a 3279 terminal in the office. The main difference is the screen refresh process, which makes the Personal Computer about eight times slower than the 3279. In spite of that condition, the experiment has been termed a success.

Improving productivity is the obvious goal of home personal computers. The Metropolitan group is currently trying to develop more applications for the Personal Computers and is considering installing several more either in homes or offices. While the technical barriers associated with attaching the Personal Computers to an IBM mainframe have been largely overcome, there are still some problems.

Technical Backgrounds

Since both executives have programming and systems backgrounds, the process of accessing a CICS application from micros in their homes went fairly smoothly. Executives who are not as "DP-smart," however, would have more of a problem. Also, because the experiment was aimed at evaluating whether an IBM Personal Computer could be used adequately in a CICS environment, not much effort was put into making the system user-friendly.

However, those with little DP background will tend not to use the system; they may be less likely to recognize its potential as a productivity tool. Making the system a true productivity tool will take a great deal of user education and motivation. In addition, more user-friendly software must be developed.

A more general problem with using micros at home is the effect on families. Micros give executives an opportunity to work 24-hours-a-day. Previously, the work that could be done at home was limited by the amount of material they could stuff in their briefcases. If most executives were given home micros, they could call their subordinates, create key files and call up data at virtually any time. Adapting to this situation could take some time.

The Metropolitan experiment is planned for two more years. During that time, the wide range of ways in which a micro can support Metropolitan's business environment will be explored.

Aaron is assistant vice-president and Bruce J. Goodman is vice-president, electronic installations, at Metropolitan Life Insurance. Both men are part of an ongoing experiment using IBM's Personal Computer indirectly connected to an IBM mainframe CICS environment.



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Speeds Up In-House Operations

Micro Connection Solves Logjams at Company

By Michael Ceigler
Special to CW‡

Intelligent Systems Corp. (ISC), a manufacturer of color graphics microcomputers and terminals, not only sells its products worldwide, but also uses them to speed in-house operations.

Since 1978, ISC has grown annually by more than 40%, creating a need for responsive, expandable data processing. During this period, the company used microcomputers connected to larger computers for more effective data entry.

The first such project was aimed at relieving data entry problems on an IBM System/32 that was used for payroll and order entry functions. The System/32 had only one keyboard for data entry, one printer and no provision for remote processing.

The subsequent logjam was eliminated by using the company's 8080-based Intecolor 8053 microcomputer to prepare order entry disks. The microcomputer, which used the FCS operating system developed by ISC, was programmed to produce IBM-like 3741 (basic interchange) diskettes for the System/32 to read. The diskettes were then processed in batch mode.

Improving Data Entry

The software, which was made available for sale, emulates an IBM 3741 with full-screen editing and color enhancement. Color coding made data entry faster and more accurate by highlighting key information and reducing eye strain, thus reducing operator error significantly.

A second project produced customer service information files and shipping documentation off-line. This project utilized a proprietary data base management system written in interpreted Basic and an Intecolor 8053 with the FCS operating system.

The system required an initial file of customer information keyed by order number and a second file of item descriptions keyed by part number.

The first file was derived from the customer master list and the open order file on the System/32. It was updated daily on the Intecolor 8053.

The second file was derived from the item master file and it was updated less frequently. A third file was keyed by serial number and was maintained on the 8053. The third file contained the product configuration.

These three files produced and printed an accurate packing list. In addition, the files created a library of customer information essential to the marketing and customer service departments.

When the company outgrew the System/32 and purchased a System/34, both applications were transferred. The size of the transferred file keyed by order number grew with sales volume. In addition, the part number file grew with the expanded product line.

This rapid expansion led to an inevitable rewrite of the shipping system. The new system, which has been in use for over a year, runs on an Intecolor 8064 Digital Research, Inc. CP/M-based desktop computer. The microcomputer has a color graphics display, 64K bytes of memory and four 1M-byte floppy disks. In addition, the micro uses Ashton-Tate's Dbase II.

The new shipping system provides, in addition to

(Continued on SR/22)

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College Tests Micros, Selects Portable CPU

By Michael S. Hines
Special to CW‡

In the fall of 1981, the computing center at Oberlin College in Oberlin, Ohio, began a study of personal computers. The purpose of this study was to recommend a standard microcomputer to be supported by the computing center for use by faculty, staff and students.

The criteria identified for this evaluation were:

- Cost of hardware and software.
- Ability to foster a standardized hardware and software environment so all users had the same features, options and so on.
- Transportability — ease of moving the equipment for a mobile population.
- Maintainability — the ability to provide local support for units on campus.
- Technology transparency — users should be able to become productive without learning computer programming, operations or terminology.
- The willingness of the vendor to establish a supportive relationship with the college.
- Availability of programs for special needs.

Since Oberlin is a liberal arts college, many of the academic endeavors that take place here involve writing and composition skills. One of the requirements for a personal computer, therefore, was that a very powerful word processing capability be available.

A secondary consideration was that the unit be able to function as a first-level programming tool. Basic was chosen as the language to support because most students and staff are acquainted with it. Fortran, whose concepts easily translate to the Basic language, was an alternative choice.

The market study culminated in July of 1982 with Oberlin signing an agreement with Osborne Computer Corp.

The agreement allows Oberlin to make the Osborne microcomputer available to the college community at an institutionally subsidized price that is substantially below the suggested retail price.

Chosen for Low Cost

The Osborne 1 was chosen because of its low total cost; the $1,795 suggested retail price includes a full business keyboard, built-in CRT display and two built-in floppy disk drives. It also includes a CPU with 64K bytes of random-access memory and standard RS-232 and IEEE 488 interfaces.

The price also includes the following software: Digital Research, Inc.'s CP/M operating system and utilities; Micropro International Corp.'s Wordstar word processor and Mailmerge word/data merge processor; Microsoft, Inc.'s Mbasic Basic interpreter; Compiler Systems, Inc.'s Cbasic Basic Pseudocompiler and Sorcim Corp.'s Supercalc electronic spreadsheet.

Since the initial agreement was signed, the program has expanded rapidly. Through Dec. 31, 1982, there have been 173 units installed on the Oberlin campus. The distribution of these units is as follows:

- Faculty — 40.
- Staff — 28.
- Students — 53.
- Total individuals — 121.

The computing center encouraged the formation of a users group to assist people who owned or were considering purchase of the Osborne 1. This group has been functioning for about four months.

The group meets twice monthly and has general presentations on how to use the computer hardware and software followed by an open session during which demonstrations are given

(Continued on SR/22)



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Price Key to College's Selection of Portable CPU

(Continued from SR/21)
and informal consultations are conducted.

The forum has helped many users by allowing quick exchange of information about the system's capabilities and limitations.

The Administrative Systems Division of the computing center is taking the lead in integrating the Osborne 1 into the administrative computing network.

Serves as a Micro

The Osborne 1 makes an ideal management workstation in that it can serve as a personal computer for word processing, simulation and modeling (using Supercalc and other software), computing (using Mbasic/Cbasic) and other commercial applications.

It can also be used as a terminal to gain access to the central computer and as a remote-entry workstation for sending and receiving data.

Oberlin is now studying how the variety of commercial software in the CP/M-compatible marketplace might be used to alleviate the applications development backlog at the educational institution.

The college is concerned that necessary system interfaces be maintained so that all administrative applications complement each other and produce a cohesive system.

Oberlin's experience to date has been quite satisfying. It has seen the downloading of personal applications such as word processing, modeling and simulation.

In addition, programming has enhanced its academic environment while reducing the load on the central computer.

Hines is director of administrative systems support, Irvin E. Houck Computing Center, Oberlin College.



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Firm Solves DP Needs

(Continued from SR/20)
packing information, end-of-day reports to management and shipping labels printed on a second printer. It also provides a daily serial number log and a basic interchange disk for daily batch updates of the open order file.

ISC's micro/host interfaces have been confined to batch operations involving disk I/O rather than on-line operations. Initially, this was due to lack of support for multiple users on the System/32.

The System/34, however, which does support multiple users, poses major hardware problems. Whereas most microcomputers are designed for relatively slow 9,600 bit/sec asynchronous Ascii data, the System/34's standard terminal interface, a coaxial cable, has a much higher speed.

Planning an Application

The company is now planning a new application that provides partial automation of terminal firmware configuration.

The system will have an erasable programmable read-only memory programmer connected to an Intecolor microcomputer and a local disk for storing the firmware options. This will be connected to the System/34 via a protocol converter, thereby eliminating the coaxial problem.

The microcomputer will thus appear to the System/34 as an on-line terminal. Data will be accessed by a program that interactively returns order information on the screen in response to the order number request. Current plans are to have this system on-line later this year.

Ceigler is software manager at Intelligent Systems in Norcross, Ga.

Twenty-Nine Micros Attached to Mini

Dolby Meets Demands by Building Micro Net

SAN FRANCISCO — Dolby Laboratories, a manufacturer of noise reduction systems, had problems. The firm could not meet demands for word processing and financial analysis functions, productivity was low and long-distance phone calls were high. Executive Vice-President Bill Jasper said Dolby solved most of those problems by installing 29 microcomputers attached to the firm's IBM System/34 minicomputer.

According to Michael Ham, the firm's information system manager, the system consists of 29 North Star Computers, Inc. Advantage microcomputers that function either as stand-alone processors or as terminals for the System/34. The Advantage processors also serve as a communications server providing a gateway to a Xerox Corp. 860 word processing system. The system is tied together by a Rolm Corp. SCBX digital communications network with both voice and data capabilities.

"We wanted to integrate the total communications system to ensure maximum productivity. Computers are not good tools if people have to enter information in more than one system to do their work. In addition, we wanted only one computer and/or terminal on each desk. We did not want people feeling as though they were overwhelmed with equipment," Ham stated.

Dolby's solution combines the IBM System/34 with three other components, all linked with the Rolm SCBX. The first component consists of 29 North Star Advantage microcomputers located throughout the company's three-story headquarters building. The Advantage micros are used for stand-alone functions such as producing memos and letters, ordering engineering parts and supplies and performing financial projections.

All of these functions are accomplished with Digital Research, Inc. CP/M-based applications such as Micropro International Corp.'s Wordstar, Ashton Tate's Dbase II and Sorcim Corp.'s Supercalc, Ham said.

"One of the key reasons we selected the North Star Advantage as our micro base was its CP/M compatibility," Ham recalled.

Communications Server

Dolby has linked the microcomputers to a second component of the system — a communications server, part of the Ethernet network connecting three Xerox 860 dedicated word processing stations and two Xerox 8010 Star systems, which can produce and print out (via a laser printer) sophisticated graphics integrated with text in final report form, Ham said.

Employees can create rough drafts on their individual microcomputers and forward them to the Star systems via a modified version of Modem 73, a CP/M-based file transfer program. The modem program allows the user to establish communication with the Ethernet network, another North Star or an outside time-sharing computer. Once the session is set up, text or data files may be exchanged by pressing the appropriate command key. The draft can then be formatted on the Star system by either a word processing operator or the employee. In addition, it is possible to send the draft to one of the 860 processors.

'One of the problems that had to be solved ... was to provide a means of interfacing [Dolby's] microcomputers with their asynchronous RS-232C communications lines to the System/34, which uses IBM's Synchronous Data Link Control.'

Documents can be sent from the 860 processors to a file server using interactive terminal service software provided by Xerox. Once the document is in the file server, any microcomputer can be used to "check in" to the file server and pick up the document via the Modem 73 file transfer software, Ham explained.

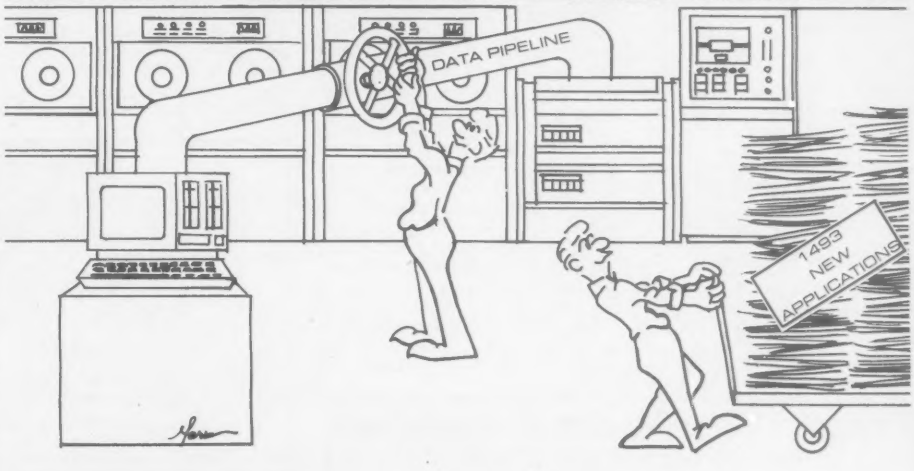
One of the problems that had to be solved in designing Dolby's system was to provide a means of interfacing the microcomputers with their asynchronous RS-232C communications lines to the System/34, which uses IBM's Synchronous Data Link Control, Ham said.

This is where the third component of the system enters the picture. Dolby decided to install an IBM Se-

(Continued on SR/24)

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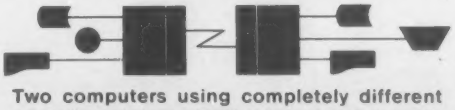


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. . . And Here Comes the Corporate Micro Store

All departmental personal computer acquisitions will now be coordinated by . . . the corporate microcomputer store.

FRAMINGHAM, Mass. — Memorandums to this effect have started to appear now in quite a few large corporations.

International Data Corp. (IDC), a market research firm based here, has predicted that the corporate market for microcomputers — for use by office workers in their daily work — will grow at an annual rate of around 40%. There will be between eight and 10 million personal computers on corporation office desks by the year 1990, according to IDC.

The corporate microcomputer store is likely to play a role in this explosive growth and will represent a significant channel of distribution. The corporate microcomputer store is a new phenomenon emerging in many corporations. Variously designated as the microcomputer store, the microcomputer resource center, the demonstration center or a similar term, it acknowledges the corporate trend toward individuals and departments acquiring their own micros rather than being tied to the data processing department.

A micro store is not the same as the purchase agreement that some Fortune 500 companies now have with computer vendors. Nor is the micro store to be confused with any employee benefit service for personal purposes. It has no relationship with the "discount specials" run by some credit unions. It is strictly an in-house store to help satisfy internal requirements.

Some Examples

• A large aerospace manufacturer in Southern California is about to inaugurate its microcomputer store.

Plans call for a fixed central location in the company. The store will stock at least one unit from each approved vendor and will have a staff of two. They will help prospects decide if they need and can use a microcomputer. The staff will demonstrate the equipment, help with the approval cycle and install the computer. The store not only will provide quick in-house maintenance at the board- or equipment-swapping level, but will also have a hot line. It can provide better and faster help than the retail store in the next shopping center.

• An international technology products corporation has approved plans for an in-house "distributed management and automation center." The center is part of the corporate information resource management plan. The center director reports to the vice-president in charge of finance, administration, planning and corporate development.

The center now has four demonstration units and one full-time staff member, chosen because of his experience and familiarity with the appli-

(Continued on SR/26)

Lab Meets Demands With Micro Network

(Continued from SR/23)

ries/1 minicomputer equipped with Gateway 34 protocol conversion software designed by Systar Corp. of San Jose, Calif. Dolby also chose Systar's Message 1 electronic mail software both for intraoffice purposes and for use as a front end for outside communications via the RCA Corp. and Western Union telex network, Ham said.

To interface with the Series/1, the North Star computers have been equipped with IBM 3101 block mode emulation software developed by Thomas Engineering of Concord, Calif. The Series/1 also converts the System/34's printer protocol for use with Xerox's Diablo letter-quality printers placed throughout the office. The Series/1 is directly linked both to telex facilities and to the System/34, Ham noted.

Another problem was how to tie the microcomputers into a network that would let users conveniently access the System/34, via the Series/1, Ethernet and its Xerox processors. In addition, Diablo printers and modems had to be installed and placed strategically throughout the offices.

"For other reasons, including rising telecommunications costs, we were looking into more flexible and up-to-date telephone networks," Jasper explained. "It was logical to evaluate those that provided data communications as well as the other features we needed," he said.

The Rolm SCBX provides data communications switching for the Advantage micros equipped to transmit at 9,600, 1,200 or 300 bit/sec; the Series/1 processor, which operates at 9,600 bit/sec; several Diablo printers connected directly to the SCBX; and a pool of 300 and 1,200 bit/sec modems. This minimizes costs for data calls made off-site as the SCBX automatically selects the appropriate modem, Ham said.

Access Is Simple

Accessing various system features from a microcomputer is easy. The user pushes a "request for service" switch on his DTI, which connects his microcomputer to the SCBX switch. The SCBX then prompts the user to enter the number of the resource he wishes to access.

After the number is entered, the SCBX connects the microcomputer to the desired resource, such as the communications computer, a printer or a modem. If that resource is busy, the SCBX informs the user and tells him how many others are waiting to use the resource. If he wishes to wait, the user will be queued automatically or he can choose to cancel; either way, he can make the most productive use of his time, Ham said.

Off-site users can also access the system via a modem by dialing directly or by having the receptionist who operates the attendant's console connect them. Once the connection to the modem is established, the user sets up the data call with this off-site keyboard just as though he were in the office.

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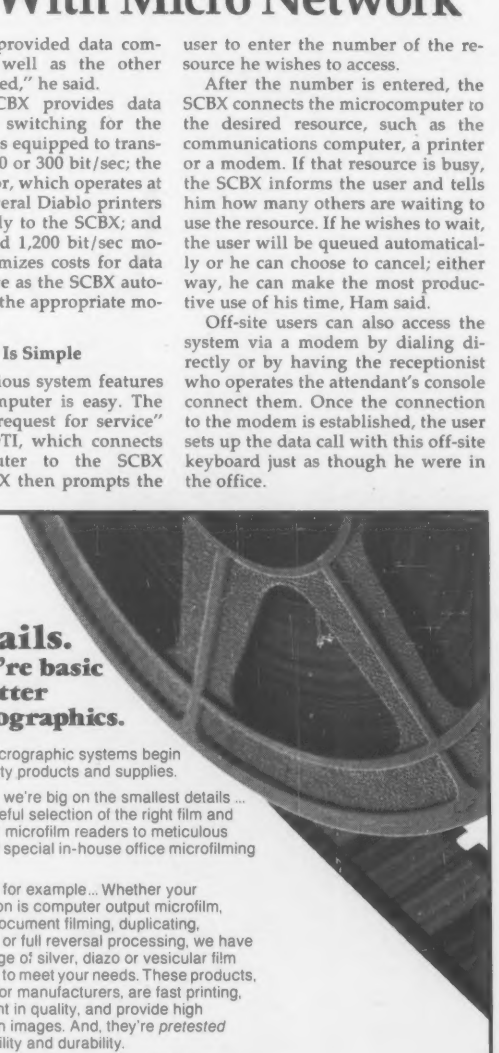


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Performs Estimates, Completes Projects

Insurance Firm 'in the Ball Park' With System

NEW YORK — Early in 1982, the Pension Systems Department (PSD) of the Equitable Life Assurance Society here was confronted with a series of events and tasks that some might say could only take place in a system developer's nightmare:

• A strong internal policy of accountability was enacted.

• A major consulting firm that had just completed an analysis of PSD suggested use of tighter systems development management practices.

• One of the largest and most critical business application systems development efforts ever undertaken by PSD — containing approximately 40 subsystems — was ready to start.

Bill Fanning, a senior systems specialist with PSD, explained the situation: "We had two choices at the time. We could either use a 'seat-of-the-pants' approach for quickly estimating the effort involved and arriving at a plan or use a detailed task-by-task approach via one of the more traditional and rigorous methods.

"Our dilemma was that the first technique would probably yield results so unrealistic that we would lose credibility with our customers and fail to meet the new accountability criterion. The second option would take more time than we had because of the stringent business time frame requirements," Fanning lamented.

A Third Alternative

"Fortunately for us, a third alternative arose," Marvin Schlanger, a systems analyst for PSD, pointed out. "A project estimation system called Estimacs [from Management and Computer Services, Inc.] had been beta tested by another department within Equitable," he said.

"It was touted to be a reliable 'ball park' estimator for project effort hours," Schlanger explained. "Estimacs ran on an Apple Computer, Inc. Apple II microcomputer and could generate its estimates from the answers to 25 questions relating to major project factors expressed in business terms. Preliminary reports were favorable from other companies testing it, so we decided to evaluate it for ourselves," he said.

PSD then put Estimacs through a series of historical validation runs and tried it on several new projects. "The results were very interesting," Schlanger recalled. "On the historical test runs, Estimacs was very close to reality in most cases. In one of the cases that it missed, we did some further research and found that the project manager had forgotten to include external consultant time. When this was included, Estimacs was in the ball park again."

Estimacs was then put to work to solve the problem at hand. "Because we had 40 projects to deal with, we requested that Dr. Howard Rubin, the developer of Estimacs, generate a special 'batch' version of the product," Fanning said.

"In this way, we got our first cut estimates in a matter of hours. The results indicated that we had about 150 man-years of work ahead of us and that the total system would take about seven years to implement," he said. "This was the kind of information that we wanted for planning purposes, but Estimacs helped us in some un-

(Continued on SR/28)

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Microcomputer Stores Meet Corporate Needs

(Continued from SR/24)

cations software that the center will promote. This staff member demonstrates the equipment and provides hands-on training to prospects. The center director helps the buyer persuade his department head of the need for and effectiveness of the microcomputer.

Do not expect to find a sign on the door of the computer store. Its manager will probably appear in the company's organization chart as director of office automation, equipment planning, technology development, productivity enhancement, resource planning or simply "planning staff" to the vice-president.

Of considerable significance to the vendors is the fact that this planner is a knowledgeable person and is less inclined to single-supplier procurement. Some of the corporate microcomputer stores now sell, in-house, four or more micros from assorted vendors.

The store is characterized by an extremely small staff — seldom consisting of more than two people. The store is generally outside of the traditional data processing or management information systems domain. Furthermore, corporate management appears to be pulling the store deliberately into the mainstream of their companies.

The micro store phenomenon started in high-technology companies. Aerospace and electronics manufacturers were the first to sell in-house microcomputers and related equipment. The micro store appears to be spreading to progressive companies — large chemical and pharmaceutical houses, publishers, some international banks and insurance companies. If the company periodically issues pronouncements about its "goal of increased productivity through appropriate technology," it is a safe bet that a store may soon be established — if it has not already been.

An established store will have already identified its sources and negotiated agreements with them. Initially, stores tend to pick the most popular or well-known models — those produced, for example, by Apple Computer, Inc., Digital Equipment Corp. or IBM. It will be difficult for other vendors to penetrate these stores for at least some time. The key to entry into corporate microcomputer stores is to sell to companies as they formulate their plans.

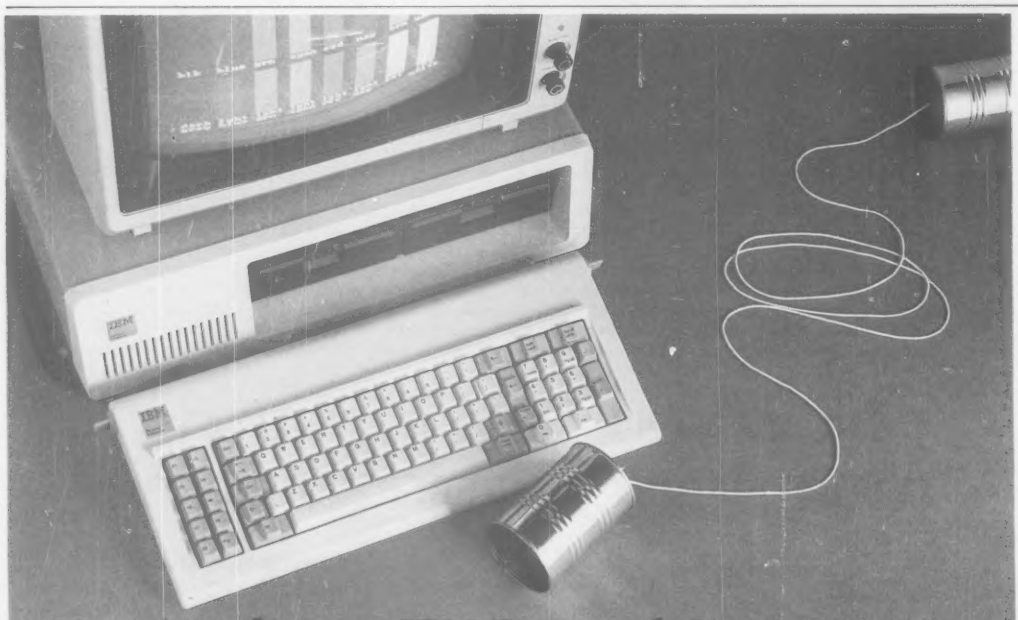
Set of Criteria

A set of criteria that would help a vendor qualify companies likely to establish a corporate microcomputer store is outlined below. Seven or more "yes" answers indicate a strong possibility that a company is likely to start a store:

- Is it a high-technology company?
- Are the annual revenues more than $250 million?
- Is the research and development budget at least 15% of the product budget?
- Does the company have more than four major divisions?
- Are the divisions known to be fairly autonomous?
- Are most of the major divisions located in one metropolitan area?
- Does the company employ a large number of professionals?
- Does it have a large multimainframe DP installation?
- Does the DP department have more than 65 employees on its staff?
- Does the company have a vice-president for planning and corporate development?

If the corporation is likely to have a microcomputer store, the next step is to locate the person in charge. In-

(Continued on SR/28)



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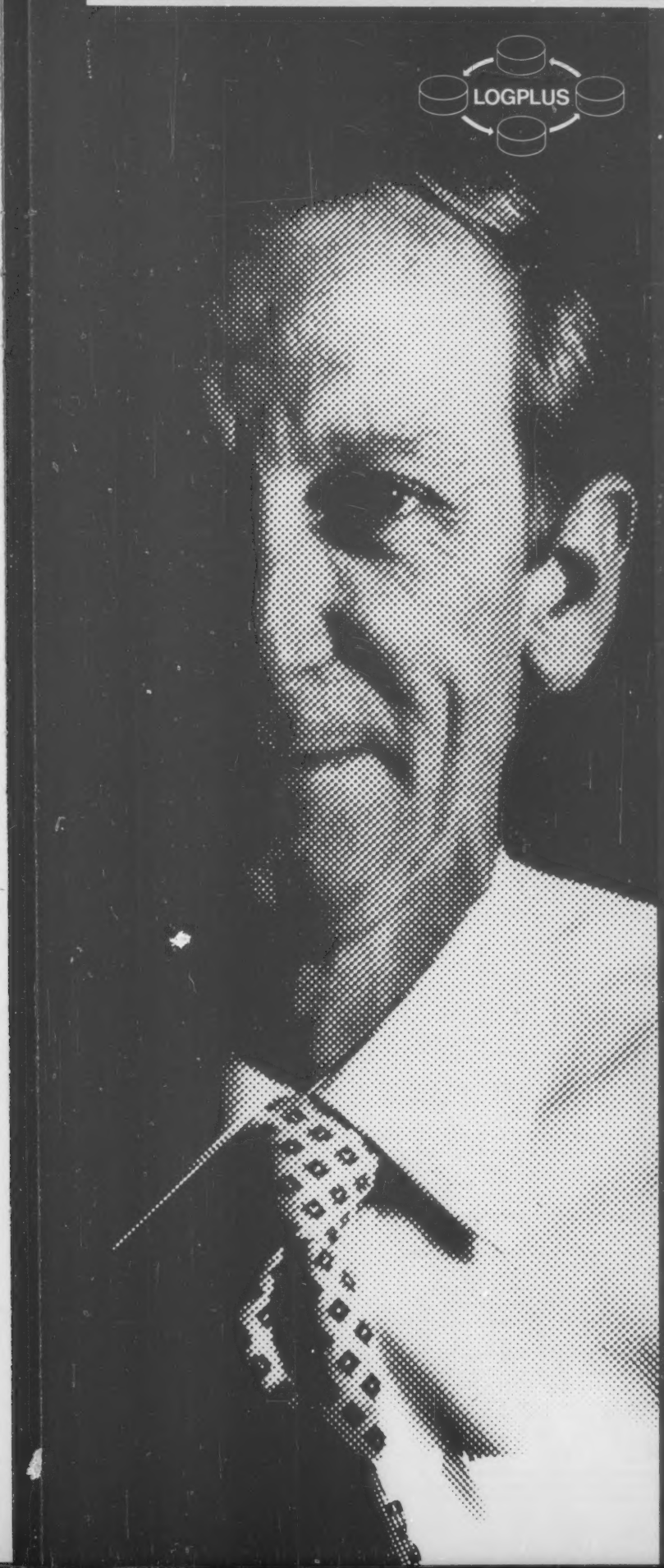
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CW

Insurance Firm Plans Projects With System

(Continued from SR/25)

expected ways when we started using the standard interactive version."

"Estimacs became somewhat of a design tool in itself," Schlanger explained. "In answering the questions about each specific system, we became aware of redundancies and inconsistencies in our conceptual design. In fact, Estimacs actually helped us visualize our designs from the viewpoint of time trade-offs. Our system evolved as we estimated it. Another benefit was the consistent approach it gave us for each project," he said.

Estimacs is now the cornerstone of PSD's management practices in the area of project estimation and planning. Schlanger has integrated it into the PSD estimation methodology. "We apply Estimacs three times during the development life cycle," he said.

"We first use it at project initiation. We sit down with our customer and Estimacs and go through the estimation process. This is a learning experience for all parties. On occasion, the customer has looked at some of the questions as they come up on the interactive display and realized that his ideas were not yet well enough defined to continue. This helps us get better system definitions early on. We then take this initial estimate and run it through some [Visicorp] Visicalc worksheets to customize it exactly to our needs. We later repeat the process after we arrive at a conceptual and detailed design.

"Estimacs is, in a sense, one of our techniques for communicating with our customers. They see the estimation process, participate in it and really become part of the project in a new way," Schlanger concluded.

Fanning reflected on the way Estimacs has influenced PSD's workings: "We now have a tool that stimulates alternatives analysis and reminds us what we should be looking at. The circle of those actively participating and contributing to project planning has increased along with our productivity and accuracy.

"While many have concentrated solely on increasing the productivity of development efforts in the coding and testing phases, we have realized a big gain at the start of our project," he said.

PSD is now expanding its use of Estimacs to include all of its modules — staff-cost estimation, operational hardware estimation, risk analysis and work portfolio analysis.

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User Needs Met By Micro Stores

(Continued from SR/26)

quiries to the DP manager may not lead to the right person. Look for someone who works for the president or vice-president who has one or more of the functions previously mentioned.

The corporate computer store will be understaffed and will have a long list of responsibilities. The more a vendor can help with these, the more assurance of success.

Elements for a Successful Approach

IDC ranks the elements for a successful approach to the corporate microcomputer store as follows:

- *Full Spectrum of Applications.* Good word processing and spreadsheets are an absolute must. Engineering analysis, a data base management system and specific vertical applications, if available on your micro, will help.
- *Immediate and Local Maintenance.* Welcome the offer of an extra unit for swapping purposes at no cost. Store directors prefer to negotiate with the vendor directly, but will accept a reputable local dealer as its service center.
- *Modularity and Expandability.* The microcomputer should have the ability to go from a 32K-byte single floppy disk system to a 128K-byte system with a 5M-byte Winchester drive. The microcomputer should also be able to interface to a variety of printers.
- *Communications Capability.* A communications package and some electronic mail abilities will find ready acceptance.
- *Compatibility with Host Computers.* The ability for the microprocessor to function as an intelligent terminal to the host computers in the company will be a definite advantage. At least some form of compatibility with the existing computer base will be expected.
- *Resource Sharing.* Sharing of files, printers and any other resources between the micros will prove advantageous.
- *Price Discounts.* A discount structure is not the first item on the shopping list of the microcomputer store. But it will certainly get the director's attention.

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CW

As Home/Hobby Market Growth Slows

Small Businesses Lucrative Market for Micros

By Sid L. Huff
Special to CW‡

The micros are coming! The micros are coming! In fact, they are here. And compared to the giant mainframe computers of a few years ago, they are small, cheap and very friendly. They even have cute names — Apple, Pet, Personal Computer. But don't be misled: While these computers can play games such as Star Trek, backgammon or Asteroids, they are definitely no longer toys.

Many people associate microcomputers with computer games. Indeed, this was an early thrust for the micro market. "A computer in every household" was the gleam in the manufacturers' eyes, and early marketing efforts mainly addressed home usage: games, child education, income tax assistance and menu preparation. The hobbyist was also at the forefront. Anyone with a soldering iron and a love of tinkering could hook up a micro to control automatically the temperature of his shower.

The bad news became evident rather quickly — that the home/hobby universe never unfolded as intended. Very few people, it turned out, really wanted to store their recipes on a computer.

Now the good news. Just as the growth of the home/hobby market was slowing, micro manufacturers and retailers discovered another, much more lucrative market — small businesses. So-called small business computers have been around for some time, but most of these units have been priced higher than the truly small business could afford. Micros have changed the cost picture by a factor of 5 to 10. There are many businesses that would not consider a $50,000 computer, but today are very interested in what a $5,000 unit can do for them.

A case in point is John Greenway, who owns and operates Sanitary Products Co., a supplier of industrial cleaning products in London, Ont. When his business expanded a few years ago, he found that he was receiving his monthly accounting statements two to three months late — far too late to be of value in making important business decisions.

To reduce the manual bookkeeping burden, Greenway investigated small business computers. However, he found that he would have to pay more than $20,000 to get an adequate system, a figure well above what he was willing to spend.

Then last year he heard a radio advertisement for a $4,000 Apple computer from Apple Computer, Inc. He attended a seminar at Lyons Logic, one of London's retail computer stores, and ended up purchasing not one, but two Apple systems — one for each of his two businesses.

Greenway knew nothing about computers when he acquired his systems, so he relied heavily on the Lyons Logic staff for assistance and guidance. They helped him select the proper software packages for his accounts payable, accounts receivable and general ledger accounting on the machines.

Bookkeeping Methods

Fortunately, Greenway found that his bookkeeping methods could be transferred to the computers with little fuss. If this had not been the case, he probably would have had to hire a professional programmer to modify one of the available packages or develop one from scratch, either of which would have added substantially to the system's cost.

Greenway admitted he did have some difficulties getting his office staff to adapt to the new way of doing things. He found that he himself had to become involved in the details of converting from manual to computer-based accounting so that he could "hold the hands" of his staff as they learned how to use the computer.

Now that he has the present applications running smoothly, Greenway is planning some new ones. His next move will be to put his product inventory on the computer so that he can easily keep more accurate inventory records. He plans to build into the inventory management package a set of "triggers" so the system can tell him the optimum point at which to reorder each stock item. He also would like to use the computer to help him calculate the commissions of his salesmen. To do this, he purchased Visicorp's Visicalc software package.

Greenway is quite typical in that he has little interest in microcomputers for their own sake. He has never written a computer program. However, he has a strong interest in see-

(Continued on SR/34)



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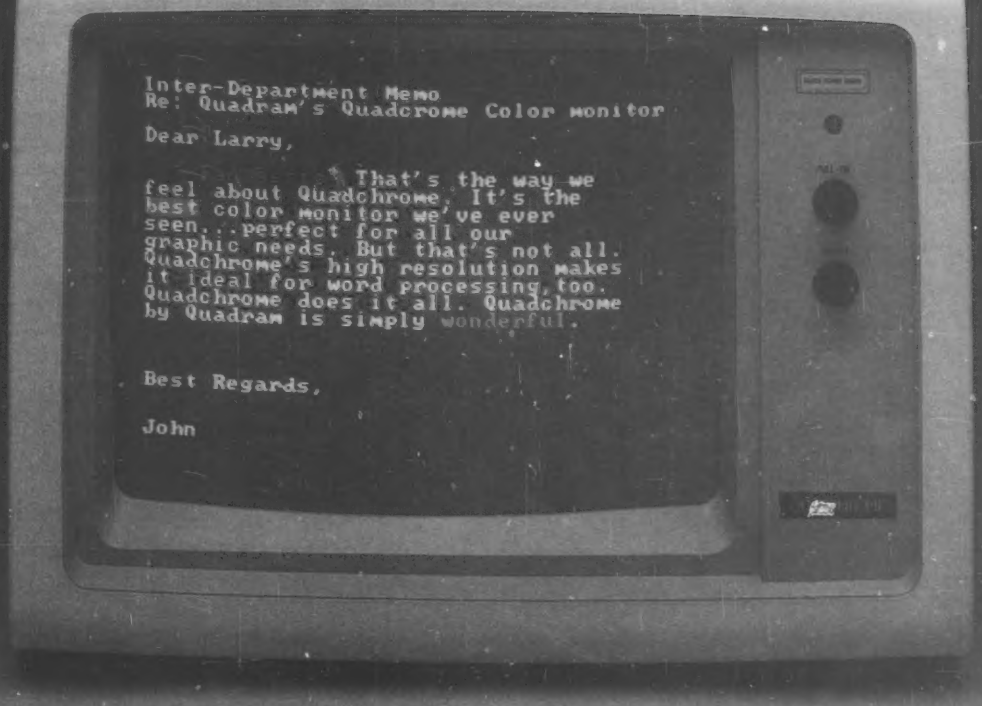
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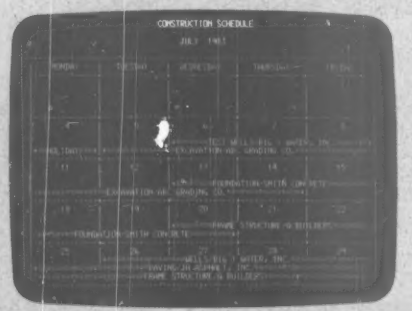
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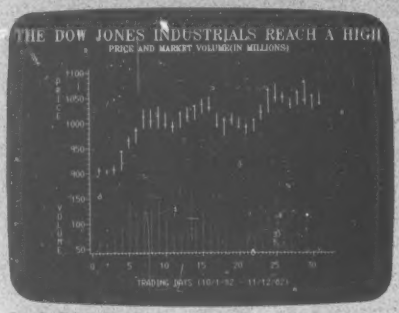


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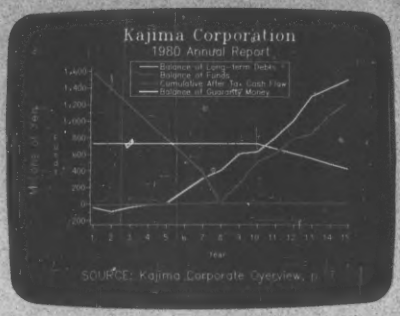
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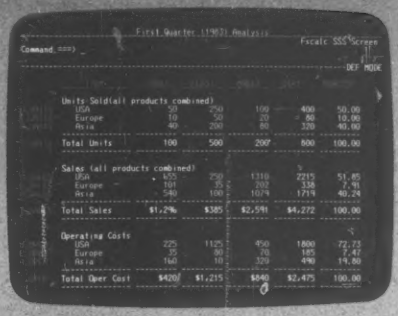
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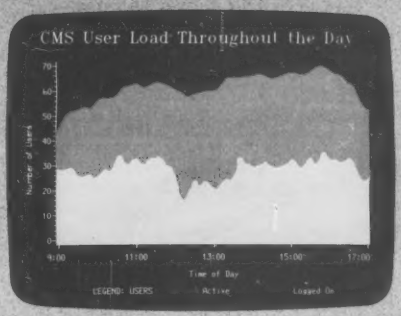
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Micros Making Headway in Small Businesses

(Continued from SR/30)

ing his business succeed, and he views his micro as a new and very useful tool in achieving that goal.

You might think that bigger companies with their own data processing departments and large computers would have no need for micros. This is not the case. In fact, in the future, the sales volume of micros to such firms will likely exceed that to first-time users like Greenway.

The reason is one of competitive advantage. There are certain kinds of services that large-company DP groups have traditionally failed to provide effectively to the managers in their organizations. These DP groups are generally very skilled at developing and running large, high-volume systems to process various kinds of transaction data, such as paychecks and sales orders, for the company.

But when it comes to providing personalized support tailored to the specific needs of individual managers, they are often much less effective. And the large "mainframe" computers these companies use are far less user-friendly or easy-to-use than are micros. The result is that the large-company DP groups simply cannot compete with micros for personalized computing.

One person who recognizes the competitive advantage of micros is Michael Brandon, manager of information systems for John Labatts Ltd. in London, Ont. Even though the corporate DP department reports to him, he is the one who convinced his company to acquire its first micro, an Apple III from Lyons Logic for $6,000.

The Apple III is one of the recently introduced "supermicros," microcomputers with substantially enhanced computing power. Brandon's Apple III, for instance, has more than 128K bytes of main memory.

One measure of Brandon's success with the Apple III concerns his colleague, Dick Haylock. Haylock spends much of his time projecting company financial statements, constantly attempting to determine what the impact would be on company performance if certain changes were to occur in either the company or the general economy.

The raw calculation burden of making these projections was staggering, so it seemed to be a natural computer application. The trouble is that when Haylock tried to use the company's main data processing facilities to do the work, he became so frustrated with the "unfriendliness" of the system that he eventually gave up and swore he would never use computers again.

Shortly after Lyons Logic had delivered the Apple III, Brandon showed Haylock some things the Visicalc program could do. A little while later, Haylock asked to borrow the computer for a few hours. Some days later, Brandon needed the micro to do his own work, but had to drive downtown instead to use one of the machines in the Lyons Logic showroom. Haylock was by that time so attached to the Apple III that he was using it throughout the day and refused to give it up. "Clearly," Brandon pointed out, "we are going to be acquiring more computers."

Sales and Service

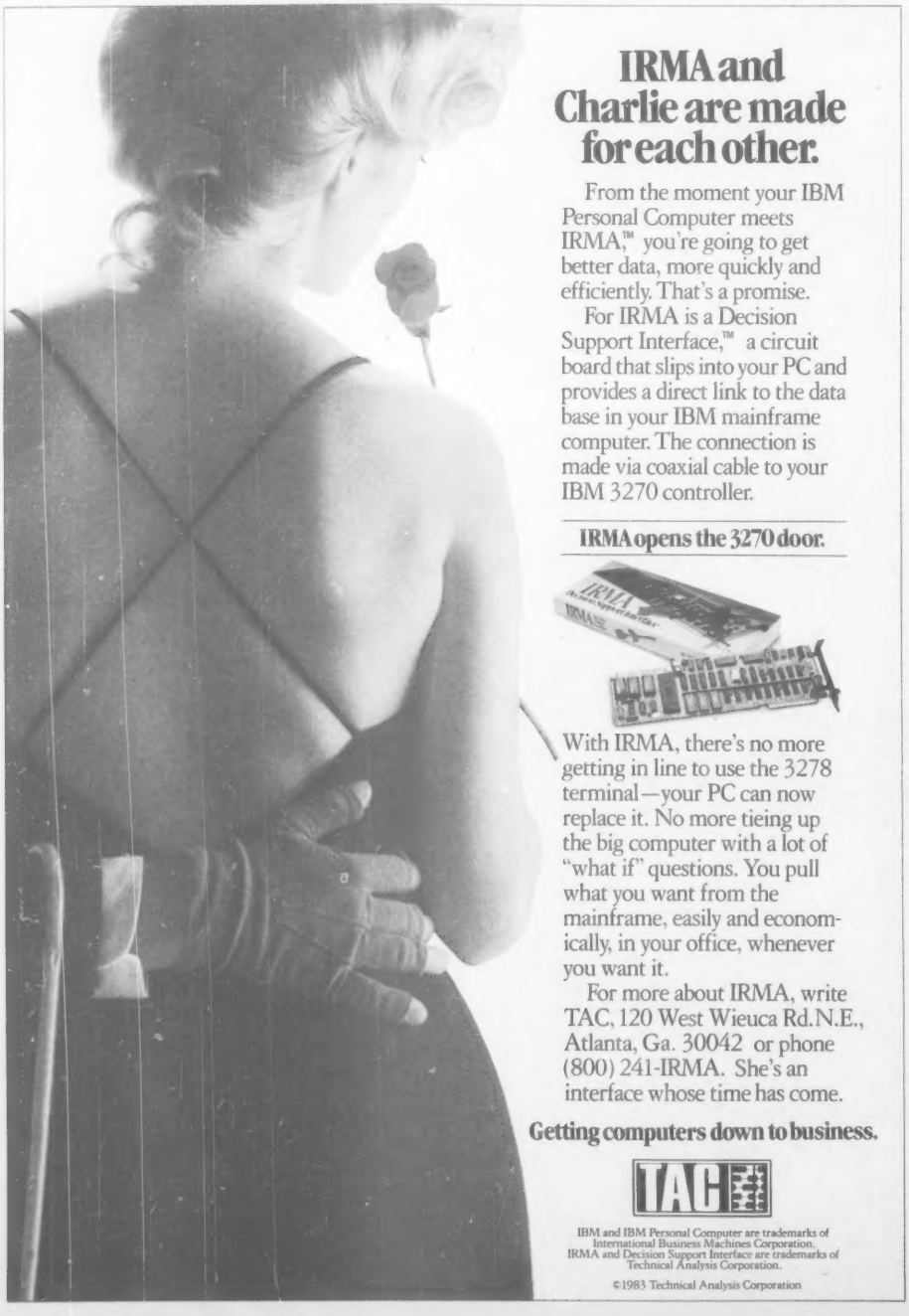
Unlike the early days of home/hobby computers, most micro buyers today are novices as far as computer operations or programming is concerned. This means they are much more dependent on their dealer to provide services such as proper equipment selection, suggestions and guidance regarding the selection of software packages, servicing broken equipment and even training in various aspects of computer use.

One of the London dealers related a story about a customer who took up many hours of his staff's time for demonstrations and discussions, then proceeded to buy his computer from a cut-rate Toronto "warehouse." This sort of customer behavior is, of course, a problem in all retail businesses. However, the willingness of local dealers to provide that customer with follow-up service has obviously been impaired, and there are few fields wherein that relationship is important.

For one thing, owners of micros are often on the lookout for new ways in which they can use their machines. Few of them, however, want to read through the multitude of journals, newspapers, fliers, manuals and other literature that is churned out daily by the industry.

The service-oriented retailers spend hours each week trying to keep abreast of the latest hardware and software offerings for the products they sell and service. This knowledge alone makes them valuable partners in their customers' computing activities.

Huff is a professor at the University of Western Ontario, School of Business Administration, in London, Ont. Canada.



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With Broadband Cable TV System

Minis Weave Elaborate Net Over Texas Campus

By Thomas Madron
Special to CW‡

Communications systems are the foundation for integrated, distributed data processing in a multi-CPU environment, a fact that every large organization will have to confront in this decade.

Regardless of whether the intent has been to create a multi-CPU system, especially with the advent of microcomputers, no data processing organization will remain monolithic for long.

At North Texas State University, this problem was formally addressed in 1981-82 when several related decisions were made. The university required a larger and faster IBM-compatible machine and non-IBM-style interactive computing. It was already acquiring a number of microcomputers.

Through gifts to the Computer Science and Business Computer Information Systems Departments, the university had acquired four Texas Instruments, Inc. DS990 minicomputers. The library decided to automate with a Hewlett-Packard Co. HP 3000, and the print shop used an automated composition system.

Assorted Inventory

In early 1983, the computer inventory at North Texas, including on campus and on order, consisted of one IBM 3083, one IBM 3031, 10 minicomputers including three Digital Equipment Corp. VAX-11/780s, five TI 990s, one HP 3000 and an old HP 2000. Added to this "system" of computers were 200 to 300 assorted microcomputers as well as a large number of terminals.

Since funding was available to establish a new computer operations center and the demand to connect the various users existed, alternative communications systems were explored for the campus.

In designing a computer network, several design criteria were established. It was essential that selected problems were met and solved, including:

- Reliability.
- Connectivity among many devices including the ability for any two nodes to communicate directly with one another.
- Provisions for port contention and management.
- Normal communications at least as fast as 9,600 bit/sec.
- Capability for supporting not only Ascii devices but also (at least in the future) bisynchronous and synchronous devices.
- A system constructed of easily available "off-the-shelf" components, with a known and reliable technology.
- Full-screen capabilities on a wide variety of devices for text editing and other video-oriented systems.
- Support for a large number of vendors' hardware.
- An affordable and cost-effective system.

In attempting to meet the criteria listed, a number of different technical solutions to the networking problem as well as a number of vendors within each technology were reviewed and evaluated. The local-area network was judged to be the conceptual arrangement that best fit the university's needs.

Unfortunately, in 1981-82, vendors either were not cost-effective or were only just beginning to provide the equipment necessary to build local-area networks that would suit North Texas' needs.

Networks such as IBM's Systems Network Architecture or DEC's Decnet were too narrowly restricted to the hardware of a limited number of vendors and were not designed as local-area networks. Xerox Corp.'s Ethernet was a potential candidate but suffered from a lack of general connectivity as well as from restrictions on the total length of the network (about 1.5 kilometers). Telephone technology using a digital private automatic branch exchange was rejected for reasons of cost as well as failure to meet other needs.

'The difficulty is that a university is often spread across a large campus . . . The objective was to connect everything and everybody.'

A local-area network was chosen because it can function very effectively within one large building or even several closely associated buildings. It has good connectivity for de-

(Continued on SR/36)

The MICRO/MAINFRAME Connection....
The experts say it doesn't make any sense to wait.

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As a DP/MIS Manager you're being squeezed. Micros are pouring through the door like water...end-users are trying to tackle your application development backlog, and they're coming to you for advice on the technology they need to do it. At the same time, salespeople are telling you that all the pieces are available now, and that they have the ideal solution for your needs.

The pressure is on. But how do you afford the time to examine all the available products, cut through the marketing dazzle, and determine which products, if any, can help you get the job done, bring everything back together, and stay ahead of the game?

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independent in-depth analyses

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"...extremely informative. I would estimate that we saved some three months of research. The presentation was truly unbiased and a refreshing change."

Jeanette Pearman
Information Center Manager
Albuquerque National Bank

"We thought we had done our homework beforehand...but we found so many new insights into the competing products that most of our preliminary legwork was invalidated. I can't imagine any attendee not getting more than his money's worth of decision support from the Software Decision Symposium."

William D. Masters
Michael Reese Hospital
and Medical Center

"Most helpful...anyone reaching a point where a decision is to be made should not do it before attending this symposium."

Henri Robitaille
Le Soleil Limitee

Microcomputers in a Mainframe World.
The end-users way out...or yours?

The Microcomputer, as we know it today, is only the beginning of a renaissance that already makes the Industrial Revolution look like a day at the beach, and will alter the way everyone looks at, deals with, and handles information in the future. The problem is it's come so quickly that there's been little time for understanding the technology, let alone formulating strategies for integration.

So, where do you start? How do you quickly assemble and exploit an effective microcomputer strategy, and still cope with your day-to-day problems?

The Answer

Here's what the Micro Decision Symposium offers:

DAY 1

- What are the selection, configuration, and acquisition criteria you should be considering?
- Compatibility...what's at issue?
- How do you effectively compare micro hardware and software?
- How do you integrate micros into the overall information systems strategy?
- What about security, data integrity, recovery, and auditability?

DAY 2

- What are the capabilities and limitations of the major hardware and software products?
- What are the real-world communications issues?
- How do you maintain and support micros?
- When do you use a Systems Integrator?
- How do you efficiently keep track of what's going on in the industry?

Schedule:

Seattle	April 20-21	Boston	May 17-18
San Francisco	April 27-28	New York City	May 24-25
Dallas	May 3-4	Baltimore	June 15-16
Chicago	May 10-11	Toronto	June 28-29

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The Answer

Here's what the Software Decision Symposium offers you:

DAY 1

- What is a Development Center?
- What are the different types of application generators?
- Do you need an integrated database management system?
- What are the management and implementation strategies?
- What products are available, and how do they compare?

DAY 2

- What is an Information Center?
- What types of jobs lend themselves to end-user development?
- What types of software should be available?
- What are the management and control issues?
- What products are available, and how do they compare?

Schedule:

New York City	May 3-4	Chicago	May 25-26
Pittsburgh	May 11-12	Toronto	June 8-9
Baltimore	May 18-19	San Jose	June 14-15

To Register:

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Mini Network Makes Waves on Texas Campus

(Continued from SR/35)

vices designed to be used by the system, but not very good general connectivity.

The difficulty is that a university is often spread across a large campus. North Texas State has, for example, nearly 19,000 students and 3,000 faculty and staff spread throughout 54 buildings. The objective was to connect everything and everybody.

The communications technology finally chosen was a broadband cable television system, Localnet 20, produced by Sytek, Inc. of Sunnyvale, Calif. There were several reasons, both technical and political, which guided the decision.

On the technical side, several vendors offered products that would allow the university to attach a wide variety of computer equipment to the cable, initially through RS-232 serial communications. The Sytek system has the decided advantage of not requiring a central processor. It maps its radio frequency modems on standard cable television. Sytek also has several products either available or under development that will provide support for bisynchronous or synchronous devices.

Once data is on the cable, the Localnet 20 provides a Carrier Sense Multiple Access/Collision Detection (CSMA/CD) packet-switched system. Initially, however, the Sytek products support a standard RS-232 serial interface with flow control that allows a wide variety of devices to be attached. The flow control system is primarily organized around an XON/XOFF standard.

The bandwidth of cable television systems is sufficiently broad to allow a variety of communications techniques. The Localnet 20 system divides a 6-MHz television channel into 20 300-KHz subchannels. Each subchannel can theoretically accommodate 256 connections for a total of approximately 5,000 connections on a pair of television channels.

In practice, a network would not be designed so heavily loaded. North Texas State set aside six inbound and six outbound channels for computer communications that could theoretically accommodate 30,000 separate connections. Each cable outlet can accommodate from two to eight RS-232 connections without further splitting or amplification.

The ultimate goal of any network is to provide services, but in a multi-CPU environment, the central computing center is not necessarily the only unit providing such services.

In addition to the central computing facilities composed of IBM-compatible systems and three VAX-11/780s, other departments have computer services that will be serviced by the network.

Faculty and staff will be able to send manuscripts to the print shop to be electronically composed on micros, word processors or on a large system. The same people, including students, will be able to access the library central catalog, a project now in progress.

Individuals or departments will be able to run microcomputer community bulletin board systems.

Electronic mail will allow reduction of the large amount of internal memoranda. Using laser video disk machines controlled over the network by any of the computers greatly enhances the possibilities for computer-assisted instruction. Already, faculty and staff are planning to have their micros talking to one another without the intervention of central systems.

It is quite possible that virtually any computer on the system, from micros to the mainframes, will be able to use central, high-speed printing services. The current plan is to use the same remote job entry devices for high-speed output for both the VAX machines and the IBM-compatible systems, possibly routing output from the VAXs through an IBM software subsystem called RSCS.

The cable system went on-line in mid-February 1983 although a development network was running for several months prior to the inauguration of the full system. Most of the projects mentioned are either completed or under active development.

A major issue not successfully confronted is the wide variety of operating systems and communications software available on the microcomputer market. An attempt is being made to partially standardize on Digital Research, Inc.'s CP/M. This has been helpful where applicable, but there are no general-purpose communications programs for use on micros that provide a common ground — even among CP/M users.

Also, the support of XON/XOFF flow control is extremely limited on micros. As time permits, therefore, North Texas University is developing communications programs of its own.

Madron is manager of academic computing at North Texas State University, Denton, Texas.

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From Centralized Environment

Managing the Move to Distributed Processing

By Charles M. Robins
Special to CW‡

Several trends are pushing the computer industry toward distributed mainframe-to-microcomputer processing, where a host mainframe acts as a central site for data and operations and microcomputers offer responsiveness, flexibility, availability and integration into day-to-day office environments.

The problem facing DP organizations is how to manage a smooth evolution from totally centralized processing to distributed processing. Disjointed local word processing and spreadsheets solve only a part of the needs of users who must also be able to move data to and from a host computer, interact on-line with a host computer and integrate to local processes.

Networking architectures and software are finally reaching maturity. IBM's Systems Network Architecture and X.25 for long-range networks, Xerox Corp.'s Ethernet, other broadband technologies and T1 satellite technologies are allowing greater coordination, control and movement of data.

These three technologies combined with increased end-user sensitivity and desire for local processing call for the resurgence of the mainframe computer, now tied into local microcomputer power. The mainframe allows all the advantages of Phase II centralization, and the micro allows the responsiveness of Phase III minis (assuming shared resources).

Terminal emulators that turn a powerful local microprocessor into a dumb terminal and put local processing out of reach of a host session will not be adequate in the '80s. An integrated distributed processing system will be an increasing requirement.

Other software components needed on a distributed microcomputer include report writers for reporting locally on data moved downstream from a host; record handling with a subset selection capability to pick out a desired set of records based on selection criteria; data analysis and aggregation allowing analysis and totaling on a subset of data; graphics interface; data and file maintenance to categorize, track, move, delete and update files; and an on-line documentation/tutorial system to maintain documentation and other information for local applications.

'Bells and Whistles'

End-users increasingly expect such functions, the so-called "bells and whistles," on all applications. Yet developers no longer have the expertise or time to provide all these functions in increasingly competitive environments.

"Vertical" business applications such as accounting systems are increasing in number and are more often being written by people with business experience rather than software expertise. Even development departments in larger companies can no longer be expected to design all the tools needed for increasingly varied and complex departmental applications. New-generation software is needed to provide "horizontal" functions that are general in nature and that can solve the needs of many business applications.

A popular approach to generalized software of the '70s is the data base management system (DBMS). While suitable to some applications and good for general functions, DBMS does not meet the needs mentioned above. There is too much complexity and change and too many varied needs and uses for one generalized system to perform all needed functions flexibly and efficiently, especially with the increased demands placed by on-line, distributed environments, changing technology and demanding end users.

An approach is needed that will allow application builders and users to integrate needed functions or components. Each component becomes a separate, generalized but specific function and is designed and optimized both to solve the problem and integrate into other components. Certain components handle host communications and data movement and others handle reporting, analysis and data input. As new technology emerges, such as voice synthesis and recognition, new components are needed and optimized for performance, ease of use and ease of integration into existing applications.

These components have the positive effect of insulating applications and extending their life cycle by adding a layer between them and the computer's operating environment,

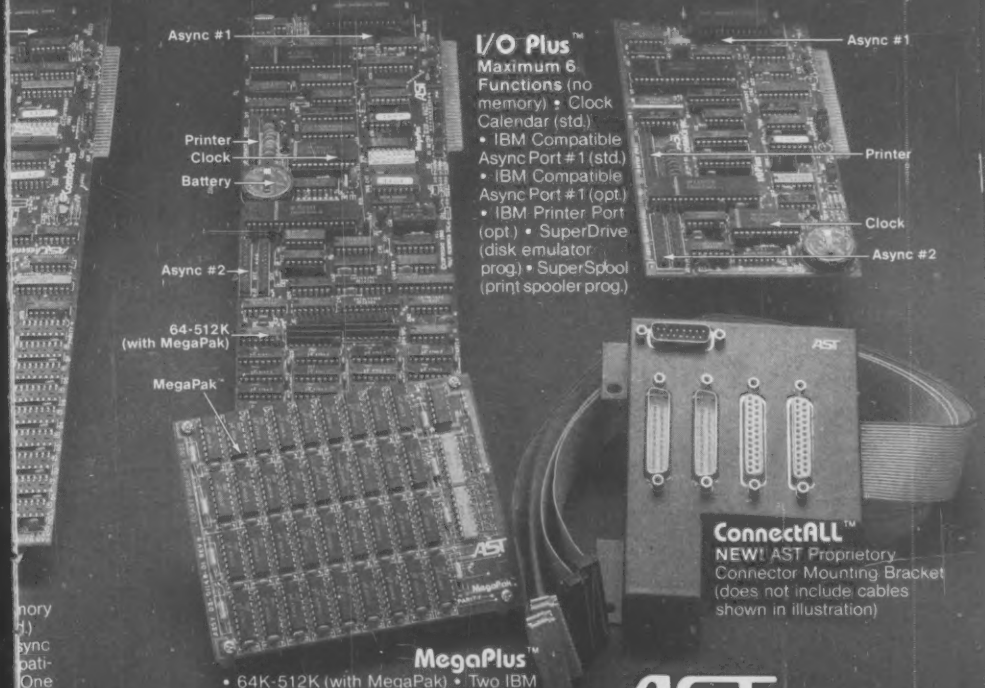
(Continued on SR/38)

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Software for Micro Integration Still Catching Up

Despite recent advances in hardware, operating system and communications technologies, there are still problems facing users wanting to integrate their microcomputers into larger computer systems.

One critical void is the lack of general software designed specifically for integrating micros into larger systems. There are four primary categories of such software on microcomputers.

• *Distributed Processing Systems.* Software dedicated to terminal emulation, data movement both to and from a mainframe in an on-line mode, batch communications and file transfer and interaction between processes running on host and micros.

• *Data Handling and Presentation.* Software dedicated to report generation, data dictionary, data analysis, graphics, file tracking and maintenance.

• *Data Collection and Screen Handling.* Data input, editing, translation and table lookups, as well as special screen functions such as split-screen capabilities.

• *Other End-User Aids.* Tutorial aids, office automation software and security systems.

To illustrate these issues, consider, for example, a typical on-line IBM environment in which IBM 3270 terminals and protocols are tied into an IBM mainframe such as the 3033 or 3081 or into a minicomputer like the 4341, usually via CICS or TSO. These terminals are connected to a controller that allows sharing of a single communications line between many terminals. The DP department would like to replace terminals with local microcomputers. This leaves the DP department with two primary needs. First, the DP shop must use microprocessors to its best advantage without disturbing existing IBM applications. Secondly, it is necessary to evolve to integrated processing for future applications (or with minor changes to existing applications).

It is unrealistic to expect a DP department to change applications initially to take advantage of new features, but it will be critical in the '80s to allow migration to distributed utilization.

Functions for Integrating Micros

There are a variety of functions that can be used to help integrate micros into a larger host network. A synopsis of functions that support such migration is given below:

• *Complete IBM 3270 Cluster Emulation.* The microcomputer should be compatible with an IBM 3270 terminal and should allow line sharing and local resource sharing. Surprisingly, many emulators lack key functions such as 24-function keys, cursor-select capability (for light-pen fields) and appropriate keypad and attribute handling.

Also, many stand-alone micros do not cluster. Most 16- and 32-bit micros solve this problem by resource sharing or by connecting several terminals to one microcomputer. Printer support to local, preferably letter-quality printers, is very important, as is a copy (screen-to-printer) command.

• *Movement of Host Data to Local Files or Processes.* The simplest such interface is a screen-to-file command to move a screen image to a file for immediate or later processing by a local application. Background 3270 processing allows a local process to access — or request — 3270 screen images.

• *Further Integration of Local Processing.* These functions increase responsiveness by moving data capture closer to the end user. This includes local screen processing and data entry functions to cap-

(Continued on SR/40)

Managing the Transition To Distributed Processing

(Continued from SR/37)

communications and end users. This layer also acts to increase transportability, assuming that software components are available on multiple machines.

Rewriting applications software often will no longer be acceptable, as will recalling software used by thousands of users due to errors caused by complexity and lack of testing. By dividing applications into vertical and horizontal components, problems are reduced, especially if horizontal components are not the responsibility of the application developer.

In the future, all microcomputers will be provided with a full array of software subsystems.

Robins is vice-president of software development at Rabbit Software in Malvern, Pa.

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Speeds Distributors' Communications

Information Company Develops In-House Net

GLENVIEW, Ill. — For several years, Zenith Data Systems Corp.'s Information Systems Department (ISD) had been looking for an inexpensive way to communicate sales, inventory, shipments, order entry and messages among its North American distributors.

About 10 years ago, the ISD sales and marketing group entertained the idea of such a communications network, but the cost of implementing such a system was prohibitive — a minimum of $15,000 for equipment per site plus monthly transmission charges of more than $300 per location.

Information exchanged between Zenith Radio Corp. and its distributors included reports on sales to dealers, product inventory, replacement parts orders, shipment notifications and credit claims. The information was carried via the U.S. Postal Service, telephone, telegram, mailgram, telex and messenger services.

Idea Revived

The network idea was revived almost 10 years later. Several factors had changed since the 1972 study. In 1979, Zenith Radio purchased Heath Co., a manufacturer of desktop computers.

The next year, GTE Corp. introduced its Telemail electronic mail network to the marketplace.

These two technologies presented a situation in which the equipment costs for such a system would average less than one-third the 1972 estimates, and transmission charges would average one-tenth the 1972 estimates. This offered a much more feasible approach to Zenith's communications needs.

Thus, a communications system was conceived that allowed the use of Zenith Data Systems (Heath) microcomputers, a stand-alone electronic word processor and GTE's Telemail.

The concept was presented to Zenith's Distributor Council, a group of distributors that met once each quarter to discuss Zenith's distributor needs. The council endorsed the idea and suggested that all distributors be polled to determine overall support. A poll was taken and 100% participation was achieved.

After the system was written, each of the distributors purchased their equipment, and Zgram, as the system came to be called, was implemented in January 1982.

Closely following the Zgram implementation, a sales and inventory system was implemented to manage the distributor's sales and inventory. Using Zgram, Zenith was provided with sales and inventory figures on a weekly basis, which involved the electronic transmission of the distributor's sales and inventory data to Zenith's corporate computer center.

There, the sales and marketing systems digested the data and produced corporate management reports each night that formerly required an additional two weeks to obtain.

All parties benefit from this setup. The distributors are no longer required to hand-transcribe sales and inventory data on a form and mail it to corporate headquarters every week. The transcription involved 300 models and 11 fields for each model, not to mention the row and column totals. They have an electronic word processor that significantly reduces their typing require-

(Continued on SR/40)

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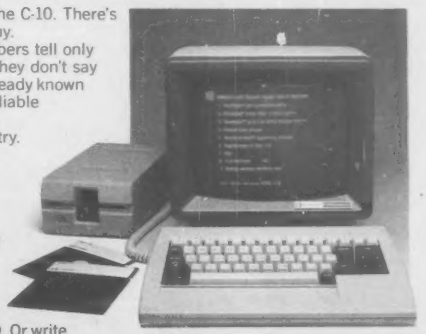
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Information Company Develops Net In-House

(Continued from SR/39)
ments, along with a fully capable microprocessor that helps them run their businesses.

With additional software that is purchased at the corner computer store, distributors handle payables, receivables, invoicing and accounting systems.

Zenith corporate headquarters shares the ability to communicate immediately and in an extremely reliable manner with all the distributors.

The corporation has realized $50,000 in annual savings just with the transmission of the sales and inventory data.

There is no more keypunching, no more forms and no more data handling requirements for the corporation.

A Variety of Functions for Integrating Micros

(Continued from SR/38)
ture and edit data before passing it up-line to the host computer.

Another key function, suspend/resume, should suspend temporarily a 3270 session to a host on the micro with the host still engaged and printers still operating and then restarted. This would, for example, enable the operator to browse through host data, move screens to a local file and then suspend the session to run local processes such as word processing; a local process could also look up a record or file and then resume for data input.

Split-screen 3270 would allow a 3270 session to occupy half of a screen and leave the other half for local processing or two simultaneous sessions can share a screen.

Host transaction access would allow a local process to access host data as if from a local file. A local "dictionary" would translate the request for data into an appropriate input to the host, receive appropriate screens and package and translate the data for the local application.

For example, a local application might request an employee number and gain access to a host employee record for display. It might then capture further information locally and use the aforementioned local transaction processor to pass results to the host or process locally.

• *Other Enhancements.* Other enhancements include automatic logon, recording of host sessions (a training and testing tool) and line utilization diagnostics.

For responsiveness, screen look-ahead would request the "next screen" from a host for "reporting" screens (those with no inputs), while a current screen is under review. When the local user requests a next screen, look-ahead will effect a reduction in response time of several seconds.

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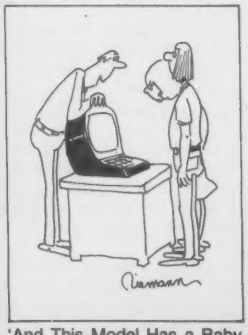
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To Avert Potential Problems

Micro Installation Requires Careful Planning

By Dale Neibaur
Special to CW‡

The unplanned installation of personal computers can create as many problems as it solves. Vital information can be locked into one computer, unavailable for use by others. Related pieces of information may be spread throughout many diskettes or computers, making it nearly impossible to extract meaningful summaries or keep accurate tally of inventories and business transactions.

Carrying information by hand from computer to computer is at best a tedious, ineffective remedy and may fail if computers from more than one vendor are used. Diskette and file formats vary widely from computer to computer and from operating system to operating system.

The effective use of two or more personal computers in a business environment requires that the computers share information easily and efficiently. This is the purpose of a local-area network.

'Information Conduit'

Traditionally, a network acts as an information conduit, allowing users at any computer attached to the network to access information stored at any other networked computer. But in the personal computer world, this traditional solution has several major drawbacks. The first is the personal computer itself.

Personal computers have been designed as "single-user" systems. Their operating systems are small and simple, having been designed for use by one person at a time. These operating systems cannot handle multiple requests for different data from several sources at once. They also cannot handle the partitioning of data among multiple computers to assure data integrity when multiple stations try to use the same file.

These operating systems could be rewritten, but they would be much larger. Many personal computers have limited memory, all of which must be available for the user's software packages to work. Also, most personal computers use floppy disks, only a few of which will be actually loaded into the computer at any time. The computer has no way of knowing what is on disks not loaded and thus cannot make that information available to other stations, even though it may be critical information.

Placing Winchester disks or other hard disks at each personal computer could alleviate this problem, but could also rapidly increase costs.

One of the major advantages of personal computers is their low price; this advantage should be exploited and not destroyed by a good network.

Finally, all data stored on the network may not be necessarily intended for all users. Security must be a major issue; certain information should be available only to certain people. But information security is hard to maintain when the data is

(Continued on SR/42)

Wide Range Of Local Nets To Explore

There are several types of local-area networks currently available.

The simplest local network consists of little more than wires connecting two or more personal computers together. Files may be transferred from one computer to another, but it requires a special program for files to be accessed from both computers.

This is little better than the hand-carried floppy — termed the "Adidas Net." The next best alternative is a simple network disk. In a simple network disk approach, simple network disks are physically partitioned into multiple floppies, which are then available for use by various stations on the network. This approach centralizes the information on the network, but does not allow it to be shared efficiently.

In the simple network environment, the operating system of a networked computer has been modified so that physical disk access calls are routed to the network disk rather than to a local disk.

The personal computer still explicitly manipulates the physical disk and will have portions of it in memory. This means that two personal computers cannot simultaneously share one of the network floppies, because the directory and file information might become contaminated.

Furthermore, the information on the disk is tied explicitly to a particular personal computer's operating system. The data is not secure (anything may be read or changed by any programmer smart enough to request it) and may not be shared by different operating systems. Also, this approach limits file sizes and numbers on the networked hard disk to the sizes available on a floppy.

A step beyond the simple network disk approach is the shared network disk. A shared network disk resembles a simple network disk in that the disk has been divided into multiple floppies that are available for general use on the network. Again, the networked personal computers' operating systems have been modified to make physical disk calls to the network disk. In addition, synchronization mechanisms have been added to allow one personal computer to lock the directory portion of the disk

(Continued on SR/42)

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Micro Integration Can Prove Awkward Task

By Deryk Van Brunt
Special to CW‡

The microcomputer became an important part of business very quickly. Unfortunately, integrating these machines into existing DP departments has so far proved to be an awkward task.

The very nature of distributed computing conflicts with the existing, centralized approach many DP managers have supported for some time. Problems of system security, data incompatibility and hardware reliability are beginning to surface.

End users are enthusiastic about the personal aspects of microcomputers. However, users expect the same kind of support they traditionally receive from the DP department for existing systems.

The key to managing microcomputers in a large organization is networking. Users expect reliable backup for their data, and they expect their data to be interchangeable with programs on various machines.

Moreover, the need for access to large-scale peripherals such as tape drives, fast line printers and large mass storage devices will most likely increase. The only solution to those problems is networking.

Networking Techniques

There are a number of networking techniques for integrating microcomputers into existing DP operations. Most of these, such as Xerox Corp.'s Ethernet, are local-area networks that treat the microcomputer like a node. The basic concept behind local-area networks is that data moves throughout the network in packets that are passed to the appropriate device.

The advantage to this approach is once the network has been developed, adding

(Continued on SR/46)

Exploring Options in Local Nets

(Continued from SR/41)

while changing it; thus, more than one networked personal computer can share the same network floppy.

In some cases, file locks have also been provided to allow a modicum of file I/O synchronization among stations. This method allows more than one station into the same network area, but does not allow sharing of data among different operating systems or machines because the network data layout is still tied intimately to the personal computer that created it. Similarly, this approach shares the lack of data security and floppy limitations of the simple network disk.

Beyond the shared network disk is the information management computer. This computer manages its own disk resources, keeping files and directories in a consistent internal format that is not accessible to the networked personal computers.

The computers on the network do not directly manipulate the disk; instead, they make logical file I/O requests to the information management computer. Full information security is maintained. Multiple computers may be in the same directory areas simultaneously; the information management computer handles all directory activity and ensures that the directory structures remain valid.

The networked computers may share directory areas and files even if they are running different operating systems. Shared file access may also be coordinated through the information management computer. Communications pipelines are provided between networked computers and synchronization is supported. Networked personal computers' operating systems are left intact, allowing a user a full choice in adding peripherals to his networked computer. Information management is facilitated; modular growth is supported.

Thus, the full advantages of personal compufing are realized without the attendant loss of information security and cohesiveness.

Unplanned Installation of Micros Can Result in Unplanned Problems

(Continued from SR/41)

physically stored in a personal computer, and all computers on the network must have duplicated security information. Also, if a personal computer is turned off while another user is accessing the information on it, the information will become unavailable.

Total data sharing among personal computers on a network is therefore impractical. The micros are not designed to simultaneously share data; they also have limited resources, lack adequate data security mechanisms and may be turned off at any time.

The solution is to connect an information management computer to the network and let this computer handle the intricate task of parceling information to the various computers as they request it. Winchester disks can be attached to the information management computer and will store all the information that should be shared among the various computers attached to the network.

Individual personal computers still may have their own local floppy or hard disks if desired. These drives will hold information that is not available on the network. Local drives are not required since a networked personal computer can get all of its information solely from the network.

The network information management computer itself must be a sophisticated machine able to meet rigorous requirements, for it must make up for the sharing capabilities that various personal computers lack. It must be able to handle many megabytes of disk storage.

The directory structure on these disks should allow maximum user-flexibility and ease of use; a hierarchical or tree structure is recommended.

The information management computer should enforce security restrictions by user. Users should log into the network and be granted access to appropriate portions of the total information available.

This security system should be very secure and should be unbreakable from a personal computer on the network.

Data on the information management computer should be accessible transparently from a networked personal computer. To the user the data should appear to be stored locally. This allows the user to work normally and also means that "off-the-shelf" software can be purchased and used on the network without modification.

Finally, the information management computer must be very fast and very reliable since all network data requests are routed through it. Network performance should not significantly degrade as more users are added.

Neibaur is a systems software consultant at Novell Data Management, Inc.

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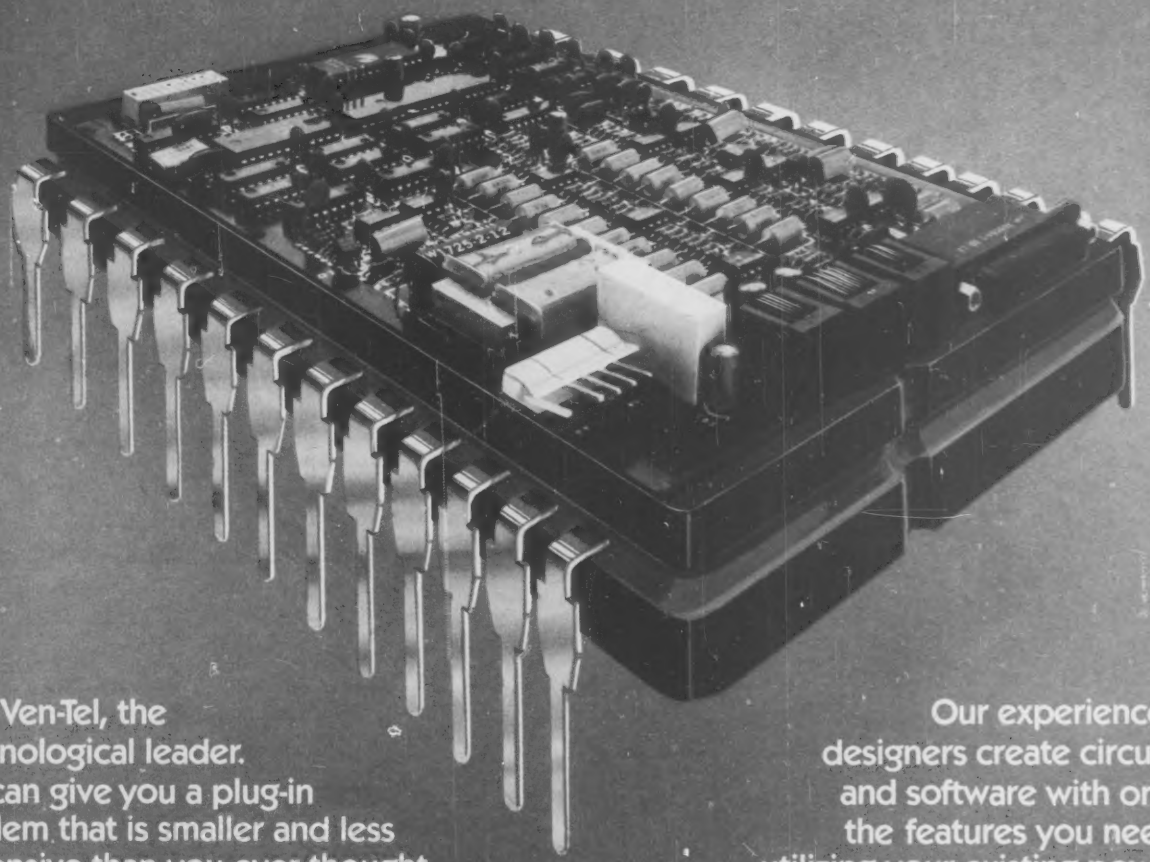
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Can Micros Mix With Business Environment?

(Continued from SR/42)

more machines is relatively straightforward, and users are able to communicate information without great difficulty.

The problem with local-area networks, however, is that microcomputers remain decoupled from the more stable, professionally managed DP environment.

That means users will not be able to access easily large system peripherals.

In addition, maintaining system security is a challenge. Physical control of floppy disks is difficult, and the user does not have direct access to a minicomputer-based operating system. Instead, each user has to make do with the support offered by the local operating system and any resources available through the network.

One solution to the local-area network problem is to develop a virtual microcomputer system that has networking inherent in the existing terminal network already supported by the host processor.

In this case, the microcomputer can access all the system peripherals, such as disk drives, line printers and tape drives, and can serve as a microcomputer when needed.

Another important theme in integrating microcomputers into larger systems is making sure there is a provision for RS-232-based file transfer.

As microcomputer networks grow, there will be an ever greater need for moving information and programs from isolated machines to other environments.

To accomplish this, there are a number of choices open to the DP manager. There are many software packages on the market that support communications between two microcomputers. One of these packages could be used to move a program. This program could then be used to transmit the program to any microcomputer on the network.

Full Advantage

Fully integrated microcomputing, either on a local-area network or by virtual approach, will be necessary to take full advantage of microcomputers in big business.

Microcomputing economics will be primarily a function of peripheral costs.

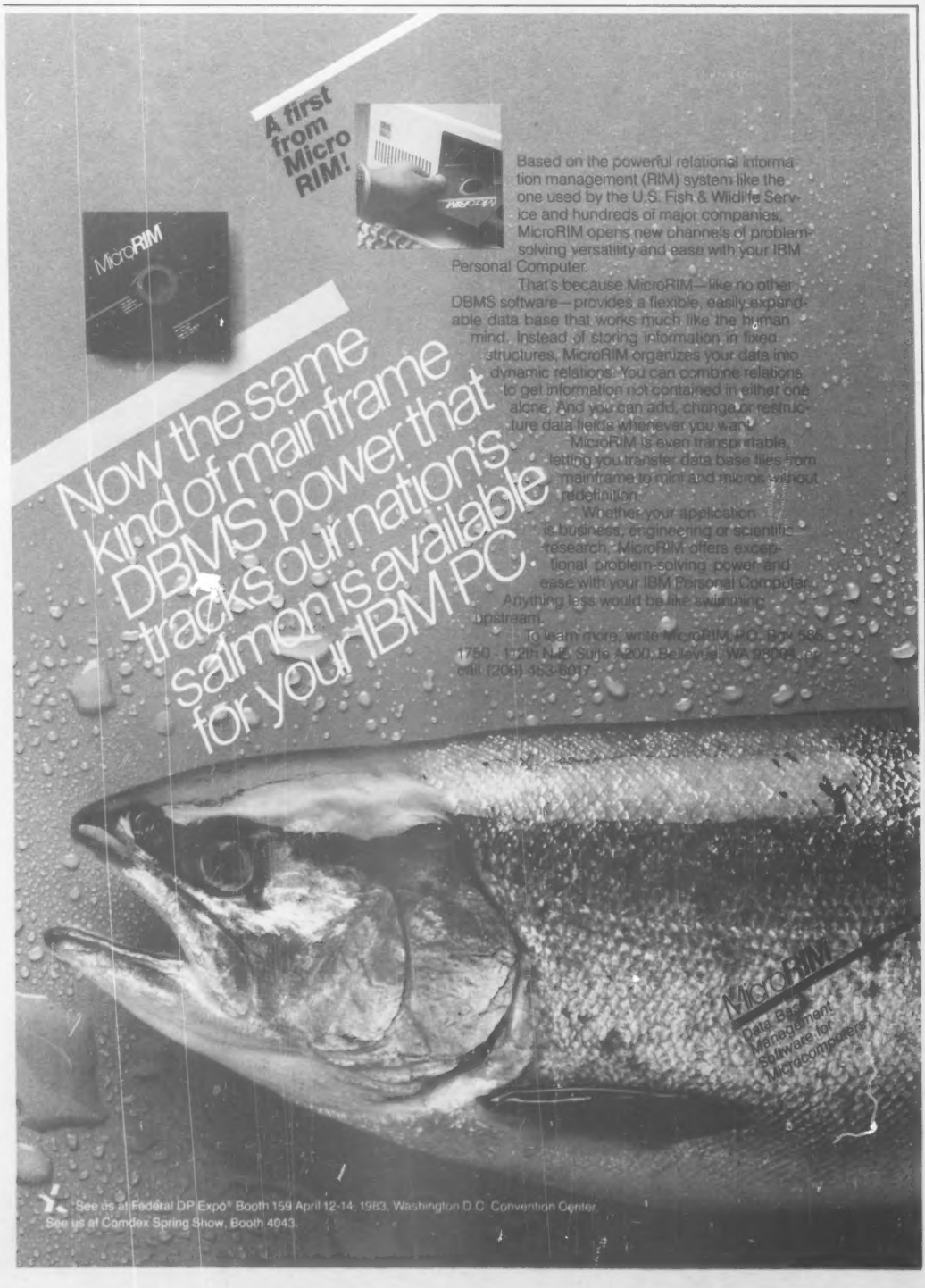
Microcomputers typically cost $3,000 to $4,000 without a line printer, hard disks or other "big" peripherals. Users will require access to these devices, which can only be provided on a shared basis.

This capability is inherent in the virtual microcomputing approach and is quite feasible through a local-area network.

In either case, the cost of providing access to large-system resources will be a small fraction of distributing these expensive peripherals.

The challenge facing DP managers is how to integrate micros into their DP operation while continuing to manage information processing in a professional manner.

Van Brunt is a sales manager for Virtual Microsystems, Inc. in Berkeley, Calif.





'I'd Like to Discuss Something With You, Ed . . . Alone.'

Security, Access Problems May Arise

Moving Micros to Business Only Half the Battle

By Dale Neibaur
Special to CW‡

The microcomputer revolution is upon us. Hardware costs have dropped to the point where most small businesses can afford a micro.

But just bringing microcomputers out of the hobbyist's basement and into the office is not enough. Many problems can arise from the move to micros. For example, if one person is not in the office, vital pieces of information can be locked away in a microcomputer, unavailable for use by others.

Diminutive physical size makes the computer less imposing; people seem more willing to use a machine when they control the power switch. Businesses and individuals are simultaneously pulled by the lure of low-cost information processing and pushed by the necessity for a competitive business advantage into buying and installing large numbers of microcomputers.

Likewise, pieces of information that are essential to completing a given project can be spread across many systems. That makes it very difficult to extract meaningful summaries or keep a meaningful tally of inventories or business transactions.

Some organizations resort to carrying information by hand from one system to another. That method is tedious at best. Other users do not even have that option since they have incompatible systems.

In most cases, microcomputers were designed as single-user systems. Their operating systems are small and simple, designed for use by one person at a time. In addition, most microcomputers use floppy disks. The problem with floppies is that only a few can be loaded on the system at a given time. The processor has no way of checking on information that is not loaded on the system.

'Security is a major issue that is made even more complicated by multiple microcomputers.'

Some users have turned to Winchester disk drives to alleviate this problem; however, costs start rising when users have to add extra peripherals.

Many people believe the solution to these problems is a good networking system, but that is often easier said than accomplished. There are questions about networking that must be addressed. For example, not all data stored in a network is intended for all users.

Security is a major issue complicated even more by multiple microcomputers. Also, when the microcomputer holding information is switched off, the information will become unavailable to all other users.

Total data sharing among microcomputers on a network is impractical. The units were not designed to share data simultaneously. Microcomputers also have limited resources, lack adequate data security mechanisms and may be turned off at any time.

An alternative is to connect an information management processor to a network and allow that unit to handle the intricate task of parceling information to the various processors as it is requested.

'In most cases, microcomputers were designed as single-user systems. Their operating systems are small and simple, designed for use by one person at a time.'

This information management processor can be attached to a central bank of Winchester disks that store all the information supposed to be shared. Individuals can still have their personal floppy disk drives for information that does not have to be available to multiple users.

The network information management processor must be a fairly sophisticated machine. It has to manage its own disk resources and keep files and directories in a consistent internal format that is not accessible to the networked microcomputers.

The directories used on the information management processor should allow maximum user flexibility and ease of use. A hierarchical or tree structure is recommended. In addition, the information management processor should enforce security restrictions by the user. That is, users should be able to logon to the network and be granted access to the appropriate portions of the total information available. This security system should be very secure and should be unbreakable from a microcomputer on the network.

In addition, the micros in the network do not directly manipulate the centrally stored data. Instead, the micros make logical file I/O requests to the information management processor. In this way, full information security is maintained.

Furthermore, since multiple processors may be in the same directory areas simultaneously, the information management processor must handle all directory activity and ensure that directory structures remain valid. The networked computers may share directory areas and files even if they are running different operating systems.

Shared file access may also be coordinated through the information management processor. Since communications pipelines are provided between networked microcomputers, the micros' operating systems remain intact. This gives the user a full choice of peripherals that can be attached to the system.

By using an information management processor, data management is made easier, modular growth is possible and the full advantages of personal computing are retained without losing information, security or cohesiveness.

Neibaur is a systems software consultant with Novell Data Management, Inc.

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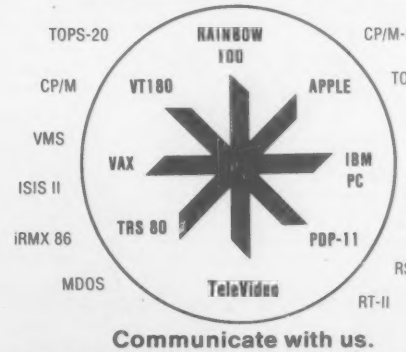
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Integrated Net Allows S&L Group to Expand

SAN FRANCISCO — A large savings and loan institution searched for a means of combining its several different communications networks, each with a unique communication protocol, to accommodate its growth by expansion. California Federal Savings and Loan Association wanted to do this in a timely and cost-effective manner while still providing the good services their customers were used to receiving.

According to Marc Feldman, management systems group, the immediate problem was to sort out a maze of overlapping needs, equipment and communications lines. "The situation as it existed required a multiplicity of networks. We had a teller terminal network. We were facing automated teller machines. We had an administrative terminal network, and we [were beginning] to install a hard-copy terminal network. And, we also had a point-of-sale terminal network. We actually had five independent networks in place."

Bill Alaoglu, assistant vice-president, management information systems division, said: "We had problems every step of the way. We had different protocols, different modems, different line speeds and types, different interfaces to our computers, real problems with maintenance and service and reliability. With that many lines and with those old-fashioned protocols, we had no way of arranging backup or intelligent monitoring of the network."

The proposed solution was something that California Federal named Integrated Communications Networks (ICN). The name derived from the fact that it proposed to take the same five networks (and ultimately any future ones as well) and integrate them onto a single communications network.

Alaoglu continued: "I think the heart of the whole plan . . . as well as the goal we were trying to reach, was to run one phone line to each location to do whatever function or to offer any service required there."

In the 1960s, the savings and loans and other thrift institutions largely went on-line to provide immediate, up-to-date teller functions and instantaneous passbook service. "While banking institutions were talking about it, we at Cal Fed were trying to implement it — sometimes successfully and sometimes unsuccessfully. And we perceived that an ICN was required to keep us there."

"In the thrift industry, the products — savings and loan accounts — sought by the customers are tied intimately to the responsiveness of the organization's data communications network. Servicing these products for the customer must, however, be balanced by cost-effectiveness. In the last four years, the question of productivity and automation to achieve cost control has become a driving force," Feldman explained.

Protocol Differences

California Federal's systems group realized a number of problems would face them during design and implementation of the ICN. Among these were questions of protocol differences: The concept of ICN virtually demanded the use of the formal Sperry Univac protocol throughout the network. But the branch equipment had tremendous variance, such as bit/sec rates, synchronous vs. asynchronous as well as protocol differences. Addition of new equipment and services in the future would compound this problem. Another consideration was the installation and maintenance of communications lines to branch locations.

"In those days, we were initially looking at some sort of a device that would give us general transparency in the network. We knew a terminal controller had to have intelligence; in those days intelligence came in big boxes," Feldman said.

"But we could see that minitechnology was being replaced by microtechnology. The impact on our communications plan was significant. Instead of placing one substantial minicomputer controller in a branch to do all the required network and systems functions, we began to forecast a number of intelligent microcomputer workstations which could do much more of the job in more discrete units.

"Just as we were backing away from the concept of a minicontroller and its programming, the Kaufman Model 871 [from Kaufman Research Manufacturing, Inc. in Mountain View, Calif.] product was introduced; it is more specialized, but intelligent. It was capable of tying together our network without tying us to a specific teller terminal vendor. It didn't require a big box, or a monstrous programming commitment," Alaoglu said.

"I think this was the key for us: Kaufman does not have any terminal allegiance, such as IBM, [Televideo, Inc.], Uniscope or whatever. And

(Continued on SR/50)

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Series Supports Five Campuses

Micros Relieve CPUs' Work Load at College

ANNANDALE, Va. — Northern Virginia Community College (NVCC) here has managed to off-load some of the duties of its two IBM 4331 host computer systems by relying on a series of IBM Personal Computers.

The 36,000-member suburban Washington, D.C., college uses the 4331s and about 300 CRT terminals to support both academic and administrative functions on five campuses.

In addition, the school provides information services for two smaller colleges, the Lord Fairfax Community College and Germanna Community College, according to the school's coordinator of information systems planning, William H. Chambers.

Initial Caution

Until recently, NVCC was cautious about integrating microcomputers into its DP operation. Don Greenawalt, coordinator of DP services, encouraged the use of micros, but warned that "central data base integrity must be preserved, otherwise we begin to maintain duplicate files, which means duplicate effort. That is exactly the situation data processing services and the college want to avoid."

But in spite of the warning, several university departments are using micros. For example, Chambers said, the school's Extended Learning Institute (ELI) recently installed an IBM Personal Computer and an optical scanning device.

The Personal Computer will connect to a remote IBM 3276 control unit. This is accomplished by using an emulation board located in the the micro, which emulates an IBM 3278.

Chambers explained that ELI is using the Personal Computer to download data from the 4331 mainframe. The microcomputers can also be used to update centrally maintained files, including data such as a student's name, ID number, address and telephone number.

The scanner is used to store and record student test results on the Personal Computer. The test results are not sent to the mainframe, Chambers explained.

The system also was designed to eliminate the huge cabinets of file cards currently used to track each student's progress in completing assignments for individual courses, Chambers noted.

The Nursing Department also uses the Personal Computer. In that application, the system is used to assign about 300 nursing students to 17 possible clinical assignments in the Washington area.

Like the ELI system, the Nursing Department's Personal Computer connects to a remote controller (in this case, an IBM 3274). The controller is linked to the micro's 3278 emulation board via a coaxial cable, Chambers said.

In the nursing application, centrally maintained data is downloaded to the Personal Computer, where it is adapted into the department's unique format, which includes clinical experience history. The program is then used to help department administrators find the "best fit" between students and clinics.

The package considers aspects such as a student's requirements vs. a clinic's specialization and a student's available hours as compared with the clinic's require-

(Continued on SR/50)



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Micros Relieve CPUs' Tasks at Five Campuses

(Continued from SR/49)

ments, Chambers said.

To ensure central data base compatibility for the micro-based applications, NVCC uses software development procedures very similar to those used on the mainframe. For example, Chambers explained, users are required to develop (with the assistance of a systems analyst) a design document defining in moderate detail how the program is to perform.

This includes file layouts, display report formats and usage procedures. This document must be approved not only by the central DP technical staff, but also by a college management board, according to Chambers.

Looking down the road, Chambers said that micros may eventually play a significant role in office automation at NVCC. The college is currently working on a plan to integrate its word processing operations with data processing.

The school plans to develop a word processing solution that not only will use the existing communications environment, but will tie in with the mainframe for terminal emulation so that word processing units can act as terminals and support an electronic mail service, according to Chambers.

'But in spite of the warning, several university departments are using micros . . . The school's Extended Learning Institute recently installed an IBM micro and an optical scanning device.'

"We're looking for a device, be it a micro or word processor, which will inexpensively plug into our existing IBM 3276 or 3274 remote control units. The same device must also be a legitimate word processor with a clearly labeled keyboard with special function keys and secretarial-oriented word processing software," Chambers said.

The coordinator of information systems planning noted that the Wang Laboratories, Inc. line of microcomputers is one possibility for the school; however, the communications capabilities on the Wang processors do not fit NVCC's requirements.

Chambers added that the IBM Personal Computer, with 3278 emulation, fits into the communications environment, but the unit's keyboard design is inadequate.

S&L Expands With Network

(Continued from SR/48)

that is a key element from both an architectural and company planning point of view.

"The Kaufman product supports a large number of terminal types. Instead of being stuck with a controller that tied you to a terminal vendor, we have a communications controller that freed us to choose any type of terminal system we need. This was much closer to the original ICN concept and sort of a 'sweetheart solution,' " Feldman added.

"In the old days, we had about 250 devices in the field. Today we are talking about over 500 workstations. The concern then was how we were going to do this by suddenly changing everything and then what would happen to all the old equipment. The Kaufman 871 box or whatever solution was to be at the end of the line would allow us to mix the terminals. And the Kaufman box does. The Kaufman box, without tying us to a specific terminal, allows us mixed terminals and types of protocols."

Feldman said the Kaufman box turned out to have an extra bonus that really was not part of the original plan — device emulation or simulation totally distinct from communications.

"We were able to utilize a very inexpensive Televideo 950 terminal that, from the host's point of view, totally simulates a much more expensive Uniscope device. We got device emulation — free, if you will — in the solution," Feldman concluded.

Consistent Protocol

California Federal had made a commitment to use a formal Univac protocol as the consistent protocol in its network. In this way, it would not have to build constantly new interfaces to the CPU.

Currently, California Federal has about 120 Kaufman units installed in its branches, and it expects to add more as it continues to grow.

Regardless of the equipment California Federal anticipates using in its branches or in the network protocol — including UDLC, the Univac version of IBM's SDLC — it would have the single Kaufman terminals, which are key to the institution in making orderly changes.

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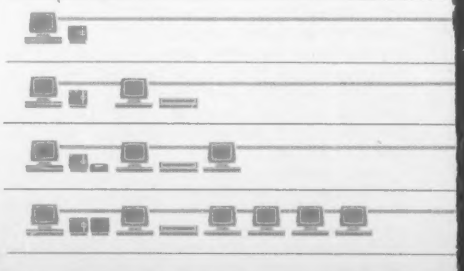
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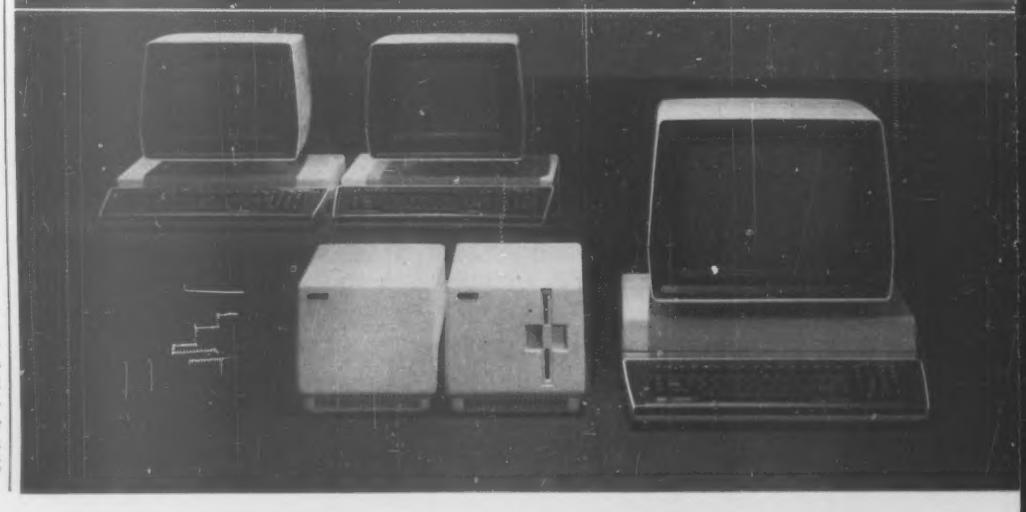
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CHOICE OF SOFTWARE. The UNIX operating system comes with the C compiler and a host of utilities as standard. Language processors, such as COBOL, FORTRAN, BASIC interpreter, and BASIC compiler, are optional.





Different, More Complex Environment

Unix Offers Alternative for Business Micros

By Kenn Morris
Special to CW‡

Companies building microcomputer networks based on traditional microcomputer operating systems, such as Digital Research, Inc.'s CP/M, will soon scrap their systems because they are too old and too slow.

Bell Laboratories' Unix operating system offers a different, albeit more complex, way of implementing microcomputers in business.

One of the reasons Unix is a viable entity in the industry is that it is a proven commodity. For the first time in the history of microcomputers, there is a mature operating system that can run on microprocessors like the Motorola, Inc. 68000. In most other cases, vendors start with an established microprocessor and install a rather primitive operating system. The result is that usually by the time the operating system has reached maturity, the microprocessor has become obsolete.

But with Unix, it is easy to develop a new compiler to accommodate a new microprocessor. Since Unix is written in the C programming language, users can write all their utilities in the C language as well. In that way, a new state-of-the-art microprocessor can easily be adapted to run on Unix.

Users of a CP/M-based system like those based on Intel Corp.'s 8088 and 8086 microprocessors cannot easily upgrade CP/M. That means the user is stuck with a lot of limited and eventually obsolete hardware and software.

Some critics of Unix point out that the operating system was designed to run on machines that are unfriendly and not readily available. While those criticisms are valid, users are becoming more sophisticated and should be able to handle Unix on their micros.

For example, children today are growing up in a computer and video games environment. Therefore, they are not stigmatized when it comes to learning new technologies.

The first wave of microcomputer systems served a valuable purpose. But the age of nonexpandable systems has ended. Users now want to purchase more sophisticated systems, and they are prepared to adapt to more complex environments.

Morris is president of Callan Data Systems, Inc. based in Westlake Village, Calif.

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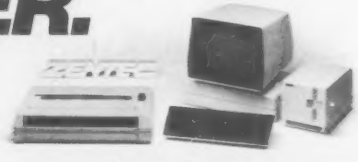
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Firm Solidifies Its Operations With Supermini

AMBRIDGE, Pa. — A building supply firm here has solidified its cement distribution business by using a microcomputer to monitor dispatching operations.

Beaver Valley Builder's Supply, Inc. supplies ready-mix concrete to the Pittsburgh, Pa., area. The concrete is blended and distributed by satellite batch plants, which are all managed by a Hewlett-Packard Co. HP 3000 superminicomputer located at the firm's central dispatch office here, according to DP manager Douglas A. Hagy.

A key to the distribution process, Hagy explained, is a batch ticket that defines the "recipe" for concrete. This recipe can vary depending on the customer's needs. For example, the batch ticket lists the moisture levels of each ingredient in the concrete. It also includes billing information, Hagy said.

Many tickets are transmitted daily, Hagy said, and the firm wanted a transmission method that would be fast, reliable and relatively transparent to users. Initially, Hagy said, the concrete firm used a system by which the satellite plants had a direct link with the HP 3000 processor via an autodial modem.

Dialing instructions were sent to the modem, and the HP 3000 sent data to the plant. However, Hagy said, this method had some problems. For example, there was a waiting period to allow the modem at the remote site to answer. Also, there was no guarantee there was still an on-line connection when the HP 3000 sent the information to the satellite site, according to Hagy.

The solution to this problem, Hagy said, was to develop a specialized microcomputer based on the Commodore Business Machines, Inc. 6502 microprocessor. Beaver Valley Builder's Supply called the unit an autodialer controller microcomputer (ADM). The HP 3000 sends dialing instructions to the ADM, which then

(Continued on SR/52)

Supports Broader Info Strategy

DBMS Provide Checks for Distributed Micros

By Brian Finneran
Special to CW‡

When an embarrassed New York City Councilwoman Carol Bellamy recently had to ask Mayor Ed Koch to drop a program she had fervently endorsed, it was because the net dollar savings to the city would only be in the thousands instead of the much-publicized millions. She cited a mistake in the base figures used for calculating the original estimate. To Bellamy's chagrin, when more current data was used, the drastically reduced savings were confirmed.

It appears that a similar scenario is occurring with increased frequency in many large and medium-size companies. A phenomenon being referred to as "Visisnow" (the projection of a figure-filled business case using questionable foundation data) is an epidemic that management inflicts on itself when distributed microcomputing is allowed in the enterprise. Decisions are made daily at every level of the organization based on such information.

While one might conclude that distributed microcomputing should be discouraged, the realities of information processing in today's world differ. It is far more sensible to take advantage of the state-of-the-art technologies and administrate their intelligent use. To permit, for example, the widespread utilization of microcomputers across the corporation without addressing the manner in which the information is handled and the transferability of that information is to invite a chaotic situation to develop. This is virtually unforgivable from a management point of view.

One of the tools that helps prevent such situations is the micro data base management system (DBMS).

The capabilities of the available micro-DBMS, although they vary by product, are very real. Their facilities at times rival those of their popular mainframe counterparts. Like the mainframe-DBMS, they support hi-

(Continued on SR/54)

Supplier Builds With Supermini

(Continued from SR/51)

assumes the responsibility of making an on-line connection with the HP 3000. By examining the electrical states in the modem, the ADM can determine whether the connection can be made. It then sends verification back to the HP 3000, Hagy said.

Once the on-line linkup has been achieved, the ADM becomes passive and allows bidirectional communication until the remote site "hangs up." Once the modem is electrically off-line, the ADM switches itself back to the data circuit, Hagy said.

Dispatchers at the site here are provided with a monitor that alerts them if the ADM cannot get on-line. Hagy said that the end result has been a self-diagnosing system that verifies the success or failure of a ticket transmission. The approach has eliminated the fixed waiting period by signaling the HP 3000 as soon as the on-line condition has been reached. This, Hagy said, has eliminated a large bottleneck in the firm's operation.

"We achieved a significant savings by using separate data lines for our local traffic and our long-distance traffic. Rather than tie up multiple serial ports with our data lines, we built a 6502-based software switch that allows the HP 3000 to route traffic to identically configured devices through a single serial port," Hagy said. He noted that while software switches are not a new idea, Beaver Valley Builder's Supply has a manual override that enables the firm to force all traffic through one line if another has difficulty. The software switch also has selectable traffic-control devices, Hagy said.



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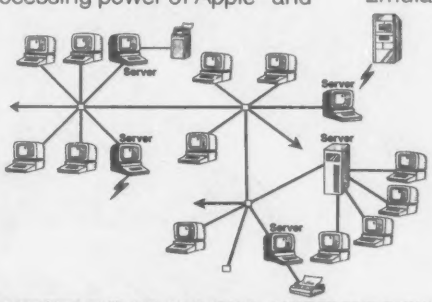
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DBMS Provide Checks for Distributed Micros

(Continued from SR/52)
erarchical, network and relational data and file relationships. Not only do they enable more to be accomplished on a single microcomputer, they have the potential of supporting a much broader information management strategy.

In most large and medium-size corporations, the time is right for such a strategy for the following reasons:

- Never before has senior management been so willing to be involved in achieving a synchronized information flow across the company's business functions.
- The management information systems/DP department is seeking to transform itself into a viable information center, supportive of "fourth-generation" tools and user-oriented applications development.
- The user departments are keenly aware of their informational dependence on each other, the need for interfunctional coordination and their lack of DP expertise.

Micro-DBMS as Catalyst

In short, it is in everyone's vested interest to support a coherent information management policy. Because of this, the use of a capable micro-DBMS can contribute enormously to achieving the goals of that policy. The micro-DBMS can easily be seen (and therefore used) as the catalyst within the corporation to "do it right" as far as distributed information processing is concerned.

Despite the relatively short life span of the personal and professional microcomputer, there is already a profusion of systems that are dedicated to managing data bases. While the systems addressed here do not comprise the entire list of data base facilities available, they are representative of the whole functional spectrum and demonstrate the caliber of systems running on the popular personal/business microcomputers used in many companies.

There are four basic levels within which all such systems fall:

1. File Managers. These systems can support relatively simple business applications using a single-file approach.

2. Data Management and Reporting Systems. More capable than Level 1 in their ability to enable powerful multifield searching, these systems nonetheless still have a one-file-per-application orientation.

3. Interfile Data Base Managers. These systems have impressive data base, data sharing capabilities and can support multiple business functions.

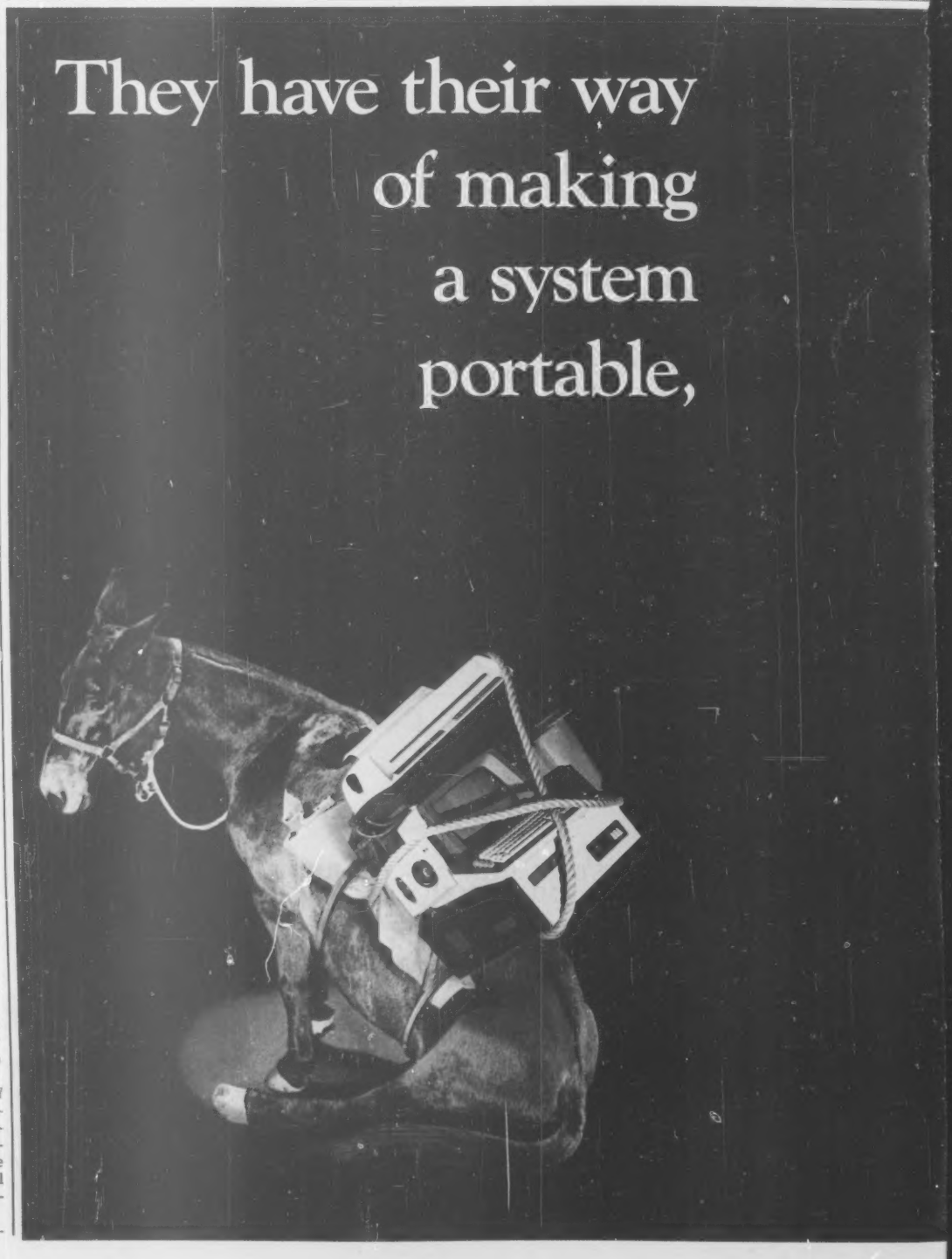
4. Fully Functional DBMS and Application Generators. These systems rival many mainframe-DBMS in their functionality; they can be easily interfaced to mainframe processing and data bases.

While the listed characteristics should enable a quick understanding of each micro-DBMS level, some of the individual systems have capabilities and limitations that might differ somewhat from those of their associated categories.

As made clear by the capabilities identified for categories 3 and 4, micro-DBMS are not starting out at ground zero. The data base concept has been getting more sophisticated throughout its 15-year history, and some of these systems reflect state-of-the-art data base functionality.

It is especially those systems in categories 3 and 4 that should be considered for utilization across a large enterprise. While systems in categories 1 and 2 might be suitable for stand-alone (local) business applications, they fall far too short in their data handling inflexibility

(Continued on SR/56)



Prices to Drop, Revenues to Rise

Desktop Systems Offer Viable Business Solution

BOSTON — Desktop and personal computers are variations of one basic product — the microcomputer — according to The Yankee Group, a research firm based here.

Both personal computers and desktop computers are one-owner machines, but they are differentiated on the basis of their users (home, education, small business, scientific, industrial and office); applications (games, education, financial analysis and accounting functions); and technology (8-, 16- and 32-bit microprocessors, internal random-access memory [RAM] capacity and mass storage devices), not their marketing labels.

Microcomputers can be divided into two basic groups — personal and desktop computers — based solely on price. Personal computers are defined by The Yankee Group according to the following criteria:

• They generally cost less than $1,000. Most people simply cannot afford to purchase a personal computer that costs more than $1,000.

• They are consumer-oriented and are sold in console form. A personal computer's console contains both the CPU and the keyboard.

• Standard interfaces attach the console to a TV or monitor, audio cassette drive, floppy disk drive and other peripherals, but these are generally optional.

• Software is oriented toward entertainment, education or personal business.

Desktop computer systems, however, are, according to The Yankee Group, business-oriented personal computers. System prices range between $1,000 and $10,500, excluding printers.

In 1981, the average desktop computer system cost approximately $3,800 and contained an 8-bit microprocessor, 64K bytes of RAM, two floppy disk drives, a monochrome display and interfaces for attaching peripherals such as printers, hard disk drives, additional floppy disk drives, modems, printers and so on. Desktop computer systems can be programmed in a high-level computer language or can run off-the-shelf software primarily dedicated to business applications.

Prices Falling Steadily

Desktop computer prices are falling steadily at 16% annually. The Yankee Group expects the average system to fall from $3,800 in 1981 to $1,800 in 1986. Moreover, the 1986 average price will include a 16-bit (or, possibly, a 32-bit) microprocessor, 1M byte of RAM and read-only memory, dual high-density floppy disk drives, high-resolution color monitor, built-in modem, standard I/O interfaces and a keyboard.

North American desktop computer revenues are growing 40% annually, and The Yankee Group expects this market to grow from $2.31 billion in 1981 to a $12.59 billion industry by 1986. It also predicts domestic unit shipments to grow 63% annually from 609,000 in 1981 to 6,994,000 in 1986. The Yankee Group expects that after 1986, unit shipments will grow at only a 30% annual rate as prices stabilize and competition lessens.

Overseas shipments are expected to exceed the 30% post-1986 North American rate because many Japanese and European vendors are just beginning to step up production. These overseas vendors will also be more ag-

(Continued on SR/56)

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Prices for Desktop Systems Falling Steadily —

(Continued from SR/55)
gressive in exploiting markets in Africa, South America, Europe and Asia. North American vendors will, for the most part, forego these markets due to intense Japanese and foreign competition, unstable political climates and stringent import policies. In fact, Apple Computer, Inc. is already running into trouble in the oriental market where a flood of cheap copies that cost less than $500 are eroding its market.

Overall, worldwide desktop computer shipments will grow dramatically from 1981 unit shipments of 836,000 to 1986 shipments of 10,694,000 for a 66% compound annual growth rate. During the same period, revenues will increase 44% annually.

The desktop computer market is a melange of cute names ("Apple," "Pet" and "Trash 80"), cutthroat competition, interwoven distribution systems and big money. Formerly disdained by large computer companies, the desktop computer industry began to attract the interest of the large computer firms when the sales of high-priced mainframes and minicomputers began to fall off.

Furthermore, when the economy slumped into a recalcitrant recession, personal and desktop computers continued to sell exceedingly well. Although margins were low, personal and desktop computer vendors overcame this limitation through large volume, retail sales and limited support.

All this finally attracted the interest of the "big boys." Apple welcomed IBM into the market with daring bravado by taking out full-page advertisements in *The Wall Street Journal* and *The New York Times*. Apple believed IBM's entry into the market would finally make the market legitimate in the eyes of the Fortune 500 companies. Since then, Digital Equipment Corp., Wang Laboratories, Inc., Burroughs Corp., NCR Corp. and other large DP companies have entered the fray.

Increased competition from IBM, DEC and others will stimulate, rather than wound, the market. As the desktop computer market moves away from its hobbyist origins, the effect on current and future vendors will be diverse. Apple's enthusiastic welcome will be short-lived, however, as it begins competing with IBM for re-

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Administrate Micro Use

(Continued from SR/54)
for corporatewide usage.

One major mainframe-DBMS vendor is Cullinet Software, Inc. It purchased Computer Pictures Corp., a micro-based graphics company, and has thereby acquired both graphics and micro software expertise. Since Cullinet's experience with distributed data base processing extends beyond 10 years, one can assume that they will be announcing a micro-DBMS facility in the near future.

There is no current shortage of capable micro-DBMS, however, and the task at hand for many companies will be to select the appropriate one and use it in the proper manner.

Finneran is a principal consultant for the New York Data Base Group in White Plains, N.Y.



'It's OK, We Can Talk in Front of It.'

Sixteen Percent Drop Predicted Annually

tailers' limited shelf space, access to scarce programmers and IBM-devoted corporate accounts. With the Apple II now four years old and the Apple III just starting to catch on, a great deal of Apple's success will rest on its daring distribution strategy (for example, dropping agreements with Computerland and the Xerox Store) and the recently announced Lisa and Apple III.

Tandy Corp.'s strong retail network and diversified product line may be least affected by the big computer companies. With its own distribution network (Radio Shack), Tandy's only major problems are reputation (it still suffers, unjustly, from the "Trash 80" nickname) and the weakness of its premiere product, the Model 16, which still lacks a multiuser operating system that would capitalize on the power of its Motorola, Inc. 68000 microprocessor.

In terms of price, Commodore Business Machines, Inc. is the leader among the major desktop computer vendors. With its recently introduced Model 64, the BX256 and B128, Commodore has forced personal and desktop computer prices to a new low.

Commodore's major problems are its lack of software and its distribution network. All the new Commodore products will offer optional Digital Research, Inc. CP/M cards, and this circumvents Commodore's software problems to some extent. Although this gives Commodore users access to thousands of programs, Commodore only supports approximately 50 applications. In the desktop computer marketplace, software quality and support are critical to a vendor's success.

Who Will Succeed in the Battle For Desktop Market Share?

Today's desktop computer market is a loose conglomeration of large and small companies competing for a diverse customer base in diverse ways. Over 150 companies are battling for market share. Aside from fighting for customers, desktop vendors must also compete for distribution channels, shelf space, service facilities, software suppliers and personnel (programmers, engineers, sales and support).

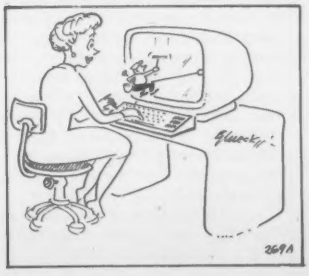
Entries from IBM, Digital Equipment Corp., Wang Laboratories, Inc. and Xerox Corp. have legitimized and intensified the desktop computer market.

Three vendors — Apple Computer, Inc., Tandy Corp. and Commodore Business Machines, Inc. — controlled 54.9% of the market as of year-end 1981 and are considered the first-tier companies. Formerly, they set the standards and led the market. Their visibility in numerous retail stores, along with their large software libraries and established user base, provided these companies with momentum.

The 1982 market shares, however, are substantially different and reflect IBM's full entry into the desktop computer market.

The first-tier companies' large installed base, however, is less of an asset than it appears to be. Desktop computer users can be extremely fickle. Like automobile aficionados, they will readily trade their old model for a hot new machine. Witness IBM's success with its personal computer, the IBM Personal Computer. In only four months (August 26, 1981 to Dec. 31, 1981), IBM sold 20,000 personal computers. This year The Yankee Group expects IBM to ship 175,000 personal computers.

Who will fail? This seems to be the big question with IBM's, DEC's, Wang's and, to a lesser extent, Xerox's entries into the market. Every new vendor must quickly answer this challenge to stand a chance of surviving. At the critical retail level, limited shelf space, inventory constraints and sales training factors are likely to shove some vendors' products out of the bigger retail chains. Other factors peculiar to the individual vendors will also affect who will fail.



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Provide Direct Link to Systems

Insurance Agents Take Micros 'On the Road'

DENVER — Security Life was 55 years old in February 1983 and has grown from a small operation with $500,000 in assets to $302 million in 1981.

To keep up with its impressive growth without a corresponding increase in personnel, the company relies heavily on the use of computers and advanced insurance software. The demand on these systems, however, has created an applications backlog estimated to be in excess of 20 man-years.

One of the company's most significant backlogs was remote on-line service to its agents. Therefore, during the early part of 1982, a working group was formed and charged with establishing a long-range plan for communicating with the agents.

At that time, service to the agents consisted of a stand-alone insurance proposal system based on a Perkin-Elmer Corp. 3230 minicomputer and a policy inquiry system under development that would run under CICS on a National Advanced Systems, Inc. AS/5-3. Both systems used the PE 1251 terminal, and there were a limited number of agents on-line.

Since all agents are independent businessmen and not subsidized through the home office, they were required to purchase their own equipment. The terminal, printer, modem and other parts cost about $45,000. So there was a considerable amount of pressure for Security Life to support one of the microcomputers.

The agents felt that a micro would give them the flexibility of direct communications with the company's proposal and policy inquiry systems and still allow them to do other applications directly associated with their private business.

The corporate group established the following criteria for evaluating micros:

- It would support the agent's micro only in communications with the proposal and inquiry systems.
- The micro could be made to communicate to the asynchronous proposal system and to the bisynchronous inquiry system.
- The company could give the best support by limiting itself to only one brand of microcomputer (at least initially). Therefore, it was important that the micro have a large dealer-support network and a wide variety of software that would meet the varied personal needs of any agent's specific environment.

With these restrictions, only the products from Apple Computer, Inc., Commodore Business Machines, Inc., IBM and Tandy Corp. were evaluated. In the final decision, Apple was chosen because of its national accounts support program and the vast amount of professional software available.

National Agreement

In August 1982, Security Life signed a national accounts agreement with Apple that allowed the agents to purchase equipment directly through the company and take advantage of a volume discount. In this short six-month period, it brought seven Apple users on-line, in addition to the original 38 users with the dedicated PE terminals.

Security Life uses Tymnet, Inc. for a remote network and it provides the facility to direct an incoming message to the PE machines for the proposal system or to the 3705 for the inquiry system. It also provides 3270 emulation for the terminals. A Datastream T7 is used for 3270 emulation for the Apple computers.

The need for more sophisticated proposals prompted the company to purchase a second proposal system that runs on its IBM 4341-2 mainframe. In addition, the firm is now rewriting the PE-based proposal system to run on the 4341-2 and to increase its functionality. This rewrite will incorporate full screen (3270-type) editing in an asynchronous environment. When the upgrade is completed, the PE system will be removed.

In addition to the Apples in its network, the firm currently has 15 Apple III systems within the home office. These machines have been significant in relieving pressure from the firm's saturated central word processing department. However, they are also used to perform many tasks that would never have been able to be put onto the company's mainframe computers, given its applications backlog, according to the assistant vice-president of systems, David Hatch.

"As an example, much of the systems department project control sys-

(Continued on SR/62)

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Started With Random Use

Formal Micro System Ties Sales Offices to Net

PLAINVILLE, Conn. — About two years ago, a number of sales offices in General Electric Co.'s Contractor Equipment Business Operations Division here started using personal computers to perform sales analyses and to develop related applications. This happened because people in the sales offices needed access to the firm's information services network and needed to develop a number of specialized applications for their own use.

This random use of personal computers soon led to a formalized system, designed in 1982, using IBM Personal Computers with 128K bytes of random-access memory, expansion cards for additional serial and parallel ports, a battery clock, a 15M-byte disk and an autodial Racal-Vadic, Inc. modem. The system uses Cobol 80 running under IBM DOS as its primary language to facilitate maintenance and transportability.

The system also allows users to enter and validate data and generate local reports on the Personal Computer without access to the General Electric Information Services Co. (Geisco) host, according to GE Contractor Equipment Business Operations Division managers Harry I. David, Dale R. Clement and Jack L. O'Bryan.

Key Requirement

A key requirement of this approach was the availability of fast, reliable and easy-to-use communications between the Personal Computers in the sales offices and the plants, David said. Various communications packages provided some of these characteristics, but none provided them to the extent GE felt was essential for successful implementation of the system. The Personal Computer's asynchronous communications had to be enhanced to provide the integrity, error detection and recovery necessary for the application, David said.

The solution was to develop an asynchronous communications package for the IBM Personal Computer using Basic.

This communications package interfaces with Geisco's Mark III Service to link a network of IBM Personal Computers and reportedly provides:

- Unattended operation and ease of use.
- Enhanced data integrity.
- High transmission efficiency.
- Security features, including encryption and decryption of sensitive data.
- Remote Personal Computer maintenance.
- Electronic message delivery.

The package described would require significant modification to operate with other personal computers or to utilize anything other than a Geisco host, David said. All communications would be initiated by the Personal Computer. This package is proprietary to GE and is not currently available commercially.

The salesman uses the IBM Personal Computer during the day to prepare propositions that are printed locally and immediately. This process creates several files that must then be transmitted to a plant or headquarters location, according to David.

Immediate or "express" transmission is sometimes necessary, and it is possible. Deferred transmission is preferred, however, to take advantage of off-peak discounted I/O and phone costs.

Since no one is in the office at such hours, unattended operation became essential, David said.

Both express and deferred transmission had to be extremely easy to use by clerical and sales personnel, with no local assistance when problems were experienced. This was accomplished by leaving the Personal Computer on after hours and using a program in the Personal Computer to check the battery clock for the predetermined sign-off time. A status screen warns of any meddling fingers and marks a "count down" to transmission time with other information. At the appointed hour, the Personal Computer initiates the communication session with the host using a Racal-Vadic autodial modem. All interactive responses — line rate, parity, phone numbers, user numbers, passwords and so on — are replaced by using file input, according to David.

The program initiates the dialing sequence; it will try the dialing sequence several times on the least expensive primary routing before trying two other alternative numbers. Once a line is seized — carrier detected — the Personal Computer

(Continued on SR/62)



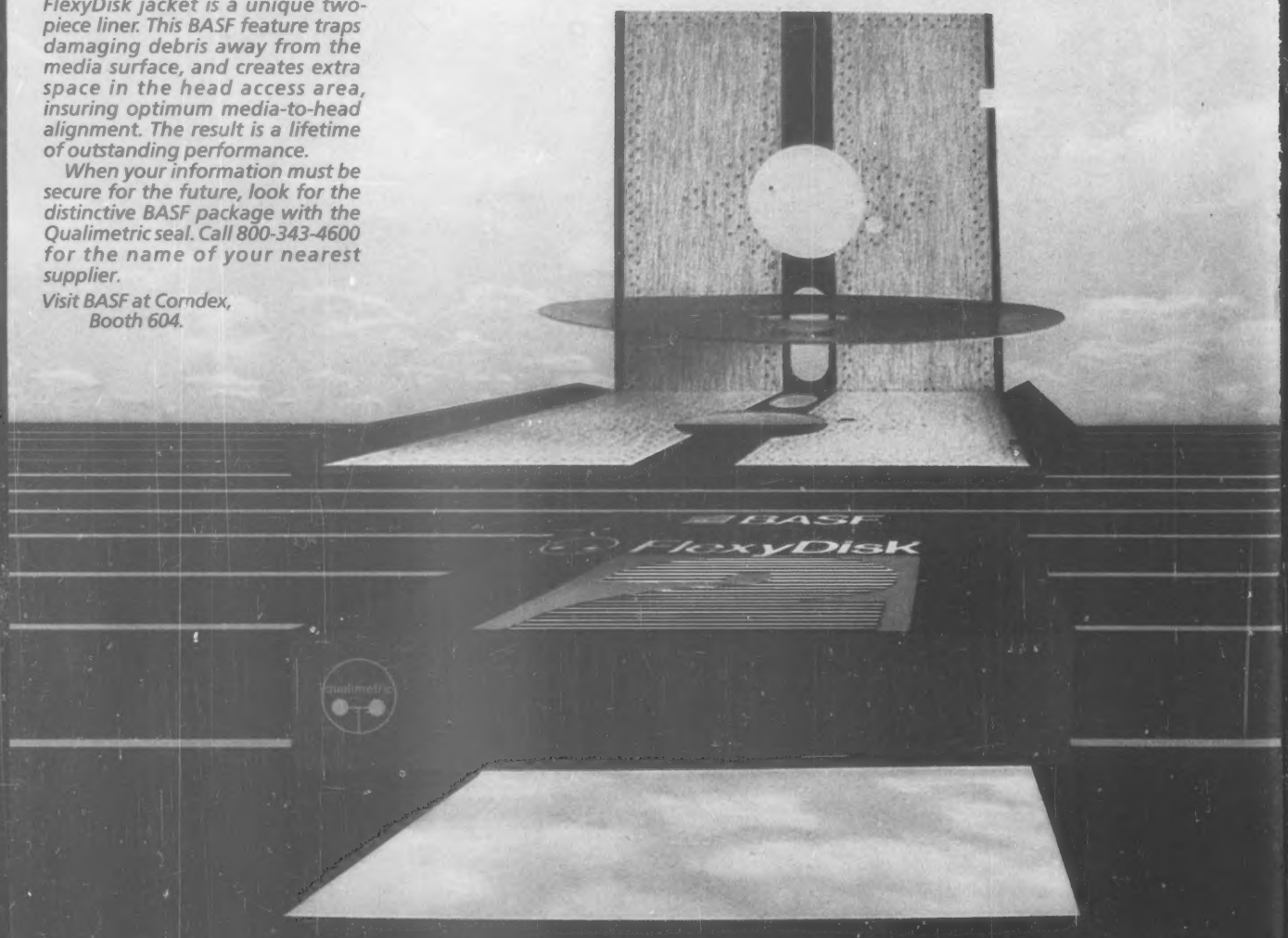
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Seminars Reveal Myriad of Problems

Is Micro Migration Causing Data Base Mayhem?

By Guy Cimo
Special to CW‡

Users of large mainframes are observing departments within their company migrating to microcomputers to satisfy increasing demands for a variety of new data and word processing applications.

These marvelous cost-effective systems perform a multitude of tasks upon demand by personnel who do not have computer expertise. A marketing executive can look at a forecast and predict the effects of a price decrease.

A finance manager can easily sort out the deadbeats from the good payers when looking at an accounts receivable aging report. A bank executive can do gap, asset/liability and rate sensitivity analysis.

There is no doubt that these and thousands of other people have discovered these ready alternatives to the DP manager's traditional "Cecil B. De Mille production" — cast of thousands, millions of dollars and years in the making. Many just go to the computer store and buy a solution.

Or do they? A series of work sessions and seminars with data processing and management information systems (MIS) personnel were conducted. They revealed a myriad of problems, and several facts were discovered.

Data Base Mayhem

It is obvious that when DP departments do not provide the products and services available with microcomputers, user departments and customers go elsewhere to satisfy their needs.

Of course, the first problem customers encounter is insufficient storage capacity, which is followed by the fact that all the information they need to do the job is on mainframe files.

After that, they realize that their data base does not resemble any other data base. In fact, it does not even look like it did last week. Imagine each department establishing its own data base, learning and implementing data management, control, security, integrity, standards and all of the disciplines that took decades to develop and are in place in the DP department.

Somewhere along the way, a lot of people confused distributed processing with microcomputers infiltrating every corner of the building. When the financial manager bought his microcomputer from the computer store to write some letters on his word processor and project costs using "what if" analysis, the DP manager thought the problem went away.

The manager was wrong. The problem had just begun. After all, everyone knows that bean counters do not know how to specify what data they need from the DP department, how to maintain the microcomputer or where to buy printer ribbons.

Someone has to straighten out the mess, and it most likely will not be the finance manager. After all, he merely wants an application — he does not want a new profession. He went to the computer store because the DP department could not deliver the goods.

'Many were developing mainframe applications that emulate microcomputer programs. Using a mainframe to execute microcomputer programs is like using an 18-wheel tractor trailer.'

In the seminars, the DP managers were asked three revealing questions. First, how many people work for a company in which microcomputers have been installed? Almost invariably, all hands went up. Second, how many people work for a company in which the DP department was either responsible for or in some way involved with the selection or management of the microcomputers? Very few managers answered yes to that question. Third, how many DP departments does the company have?

These three questions led to discussions on the DP and MIS directors' responsibilities related to the proliferation of microcomputers in their facilities.

In most cases, the managers felt responsible, but tended to avoid responsibility because they really did not have the answers for those user departments coming to them with their needs.

After getting a handle on the problem, it was necessary to find out

(Continued on SR/64)

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CW-3-28

Micro System Links Sales Offices to Network

(Continued from SR/59)

signs on with a predetermined user number and password and executes a host communications program, according to David.

This communications program simulates a synchronous line interface using control turnaround flags for synchronization. The dialogue begins with a "positive handshake" acknowledgment from the host. This dialogue provides bidirectional data flow control, error detection and correction under program control, David said. A printed log on the Personal Computer's printer prints a running commentary on the night's traffic to aid the user in knowing positively what transpired and to assist with diagnosing aberrant conditions.

GE enhanced data integrity by adding a "bit sum" header character to each record and to each 4,000-char. block of records, according to David. The bit sum is calculated before transmission, and the receiving program collects the entire block in a buffer and recalculates the bit sum characters and matches them against the bit sum transmitted. The buffer is written to disk only if the bit sum for each record and for the entire block are equal. This precludes a matched bit sum for the block resulting from a combination of record errors. When this disk write is completed, an acknowledgment signal is transmitted indicating that it is ready to receive the next block or command. If an error is detected, a non-acknowledgment is sent requesting retransmission of the previous block.

The security features, controlled by the host, can transfer control to a master personal computer for changing passwords, phone numbers or encryption keys. According to David, the security system was designed to deactivate the application programs of the remote Personal Computers if certain abnormal conditions are encountered. This is reversible only by the host control.

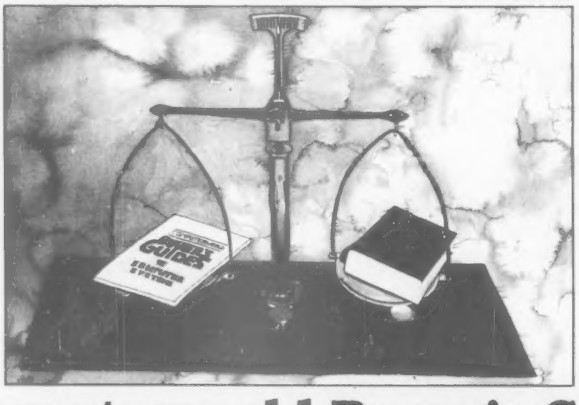
This issue was addressed by designating one or more centrally located Personal Computers to assume the role of master, David said. The master Personal Computer contains the master data base and applications programs. Data base maintenance programs on the master Personal Computer creates a log of all record changes for transmission to the host, where it is assigned a release number and stored for later release to the remote "slave" Personal Computers when they dial in for routine daily transmissions.

No distributed processing system is complete without some form of an electronic message system. In this application, messages can be transmitted from a Personal Computer resident file or keyboard to the host files from which it is transmitted directly to the printer, not the disk file, of the intended receiving Personal Computer. The remote office can use this facility either in deferred overnight mode or for immediate express communications.

The package also permits file transmissions from Personal Computer to Personal Computer via the Geisco host. The receiving Personal Computer obtains the transmitted files when it signs on for the next communications session.

The system described is scheduled to go on-line in the U.S. by March 31. A related application, IBM Personal Computer to IBM System/38 communications using SNA/SDLC is now being investigated.

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Have Micros, Will Travel

(Continued from SR/58)

tem is being shifted from the mainframe to an Apple III, and we are currently evaluating project management systems to further off-load the mainframe and provide additional flexibility," he noted.

What does the future hold for microcomputers at Security Life?

"We will be watching with great interest the progress of Apple's new Lisa system, since we may adopt it as the basis for our future office automation system," he said.

"More specifically, however, plans are currently being formulated to allow the Apples as well as our ever-growing number of local 3270 terminals — 150 to date — to interact with each other in our Rolm [Corp.] CBX-based local network for applications such as electronic mail. Our current Rolm system will be upgraded to handle data transmission during 1983 and the electronic mail system is estimated to be in place early in 1984," he said.

Security Life also anticipates being able to allow programmers access to VM/CMS from their Apples. This should allow these people on call to solve some middle-of-the-night production problems from their homes instead of driving to the office.

For Project Cost Estimates

Architectural Firm Designs Its Own Micro Net

SAN ANTONIO, Texas — An architectural firm here has done more than design buildings for other people. The firm recently designed its own microcomputer network.

The architectural firm of Rehler, Vaughn, Beaty and Koone, Inc. (RVBK) employs 42 people and provides architectural, landscape architectural and interior-design services. According to Arthur P. Mazuca, associate vice-president for DP, RVBK is considered large by comparison to other architectural firms, which consist of about six to 10 people.

RVBK recently installed a data processing system that consists of a 10-station Televideo, Inc. network. Using Digital Research, Inc.'s CP/M operating system, the system uses a Televideo TS816 microcomputer that is equipped with an 18M-byte hard disk drive.

The TS816 can support up to 16 stations and is responsible for handling mass storage. The unit also drives two of the three printers at the firm, Mazuca said.

Main User Station

The main user station is a Televideo TS802 microcomputer. Based on the Zilog, Inc. Z80A microprocessor, each unit has its own printer (a Texas Instruments, Inc. TI820) and two floppy disk drives offering 340K bytes of memory each. About nine of the user stations, however, are Televideo TS800A microcomputers. The units are also based on the Z80A microprocessor, but do not come with disk drives or local printers, Mazuca explained.

The kind of work done on the RVBK system can be divided into three applications: word processing, accounting and architectural applications, according to Mazuca.

Word processing applications make up the largest volume. A standard word processing package, Micropro International Corp.'s Wordstar, is used to process various types of documents such as letters, proposals, contracts and construction specifications.

The word processing package is used regularly by about six people, Mazuca said.

The accounting application consists of the usual packages like general ledger and payroll. However, a special program was developed in-house to perform project cost accounting.

Mazuca said this program is used to keep track of budgeted and actual expenditures on all of RVBK's active projects. The package then is used to print monthly invoices.

With the information provided by the special project cost accounting package, RVBK can make real-time decisions based on factual data about the cost of a project.

In addition, the information collected by the package helps the firm to develop more accurately budgets for similar projects, according to Mazuca.

Special architectural programs, however, are the key to the firm's operation, Mazuca said. Also developed in-house, these packages include a preliminary project cost-estimate package for architects and contractors.

This program was developed to produce preliminary project cost estimates in the early stages of a project. It can be used as both a design and marketing tool, Mazuca said.

The program also can be used as an early way of analyzing a site. For example, the package can be used to analyze building size and parking relationships.

With this tool, Mazuca said, designers can vary quantitative and qualitative factors to develop the most efficient project within the clients' guidelines.

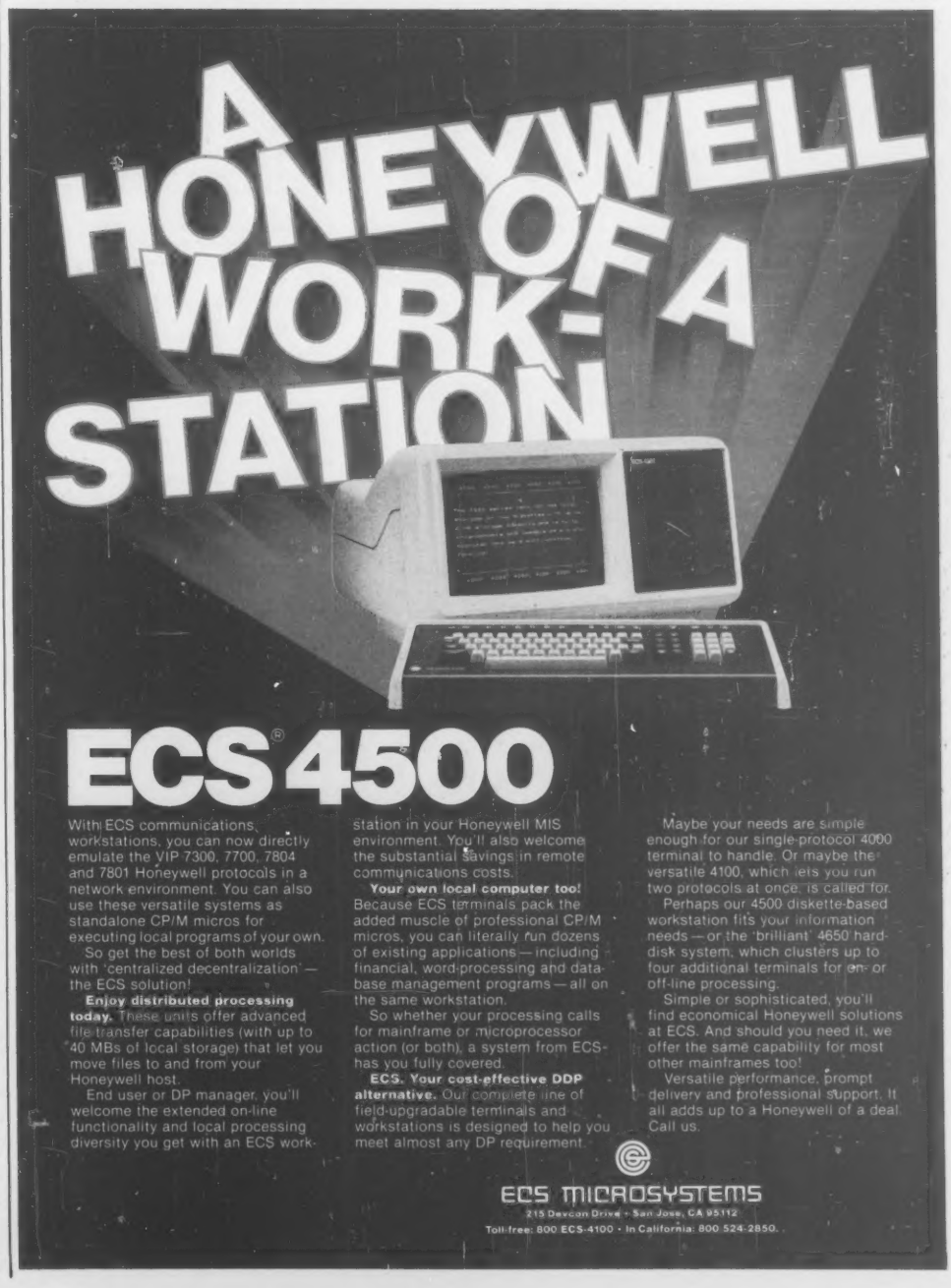
Analysis Program

Another major architectural program, Mazuca said, is the income property analysis program. This program is a tool for evaluating and structuring rental projects.

The package can consider everything up to the tax profits for the first year of operation at full occupancy. Furthermore, the package can focus on the development and construction phases of the project.

Mazuca added that the package can calculate and display income items and operating expenses in various stages of detail. In addition, the package can automatically calculate initial operating deficits and is able to work with phased projects, Mazuca said.

Mazuca added that there are several other smaller specialized architectural programs that address specific needs of the firm.



Micro Migration Can Cause Data Base Mayhem

(Continued from SR/61)

how others were dealing with it. There are many wrong ways to do the job.

Software houses seemed confused and were headed in the wrong direction. Many were developing mainframe applications that emulate microcomputer programs. Using a mainframe to execute microcomputer programs is like using an 18-wheel tractor trailer to go to the store for a loaf of bread.

This approach is in total opposition to distributed processing. Instead of off-loading such jobs from the mainframe, they are brought to the mainframe. This path is not chosen — it exists because software developers and suppliers have little choice.

Microcomputer users, on the other hand, believe they are taking care of the problem by emulating CRTs and putting them on-line to the mainframe. Of all the tasks that microcomputers can do, emulating a CRT is one of the easiest.

Communication Problem

Now that the mainframe and microcomputer users are able to talk to each other, what on earth do they say?

This situation is like connecting two telephones with a wire and trying to get a Russian to communicate with an American. The microcomputer users think they have finished the job, but they have not even begun.

The end user wants to execute microcomputer applications on data that resides on the mainframe. He does not want to be a DP manager or field service technician.

The DP manager wants distributed processing, so the end user can do his own job, and centralized control, so the end user cannot create problems.

The president wants management by design — not default.

Solving the Problem

This problem must be addressed. The following steps were taken to solve this problem:

- The end user received a microcomputer on which to run his 1,493 applications. He was given a system whereby he could define, select, extract, sort and transfer data from existing mainframe files to the microcomputer in a format that would allow him to process that data with the 1,493 microcomputer applications.

Additionally, the system is bidirectional so the user can develop a transaction or data entry file, transfer it to the mainframe for output to disk, tape, system printer or for updating master files.

- Next, the DP manager was given control of the system. All data passed between computers is controlled by an elaborate security system. Users are assigned levels of security for function, file, record and field access. The DP is the only person who can execute programs that modify master files.

Additionally, the manager was given the ability to deliver the products and services for which the user had been clamoring, while actually decreasing work load, including that of the mainframe.

- The president received the management he wanted. Now the entire spectrum of information processing may be managed by professionals with decades of experience and know-how.

This system is comprised of a powerful and easy-to-use teleprocessing monitor; an elaborate, highly versatile on-line inquiry and report system; and a unique multiprotocol communications driver.

It also includes numerous assembly language programs and intimate knowledge of operating systems, applications programs and hardware design.

Most of all, the process took an understanding of the total distributed processing system from the top down.

Cimo is the founder of Computer Enhancement Corp. located in Costa Mesa, Calif.

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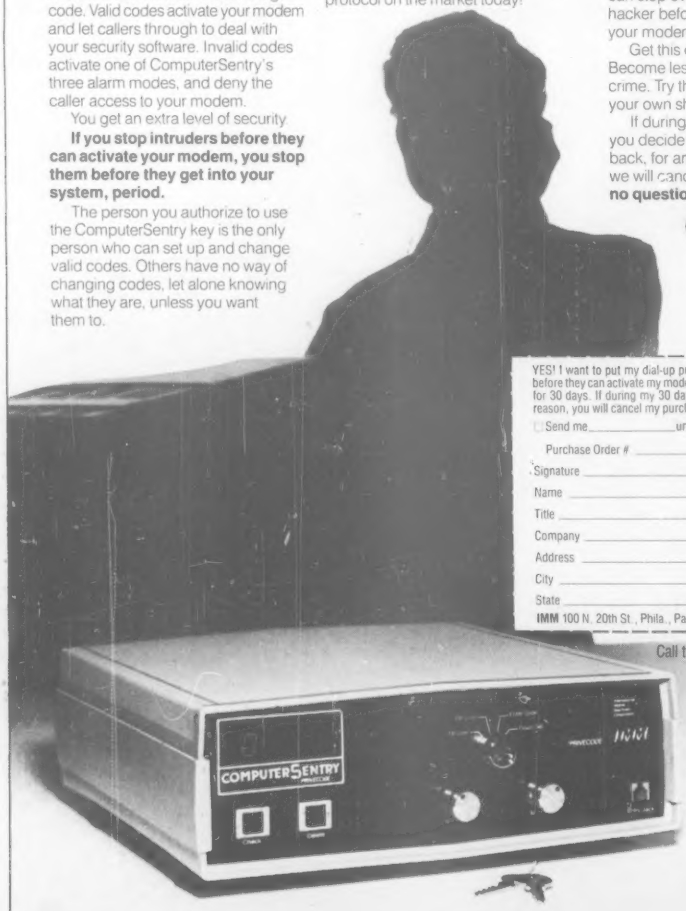
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User Access to Info Improving

Financial Aids Seen Entering New Era

By Paul Gillin
CW Staff

NEW YORK — Financial software packages are entering a new stage of development that will see less emphasis on new features but dramatic improvements in the availability of diverse information to end users.

That was the opinion put forth by Jane Kitson, product manager of commercial application software at University Computing Co. (UCC), in a session entitled "Financial Software — A Management Partner" at Software Expo East here last week.

"The emphasis is no longer on the machine, it's on how the machines can get us the information we need," Kitson said. "Every major financial software vendor is now incorporating other packages into their financial software." Popular new additions include graphics, decision support systems and microcomputer links. "The burden, up until the last six months, has been on the buyers integrating these packages themselves," she noted.

As examples, Kitson cited Cullinet Software, Inc.'s recent acqusition of Computer Pictures Corp., a specialist in analytical and graphics software, and UCC's addition of Context Management Systems, Inc.'s Context MBA package to its product line.

A typical financial package of two to three years hence will allow the user to download accounts receivable, accounts payable and shop control data at the same time and manipulate them "so you can see what your cash position is really like."

Kitson noted that financial software has completed two distinct stages of development. The first, she said, was organizational control, in which the software was used primarily to ensure that plans and tasks were carried out. In the second stage, which she called management control, managers used financial software to plan budgets and personnel practices and to measure performance.

Now financial packages are moving into the realm of strategic planning, Kitson asserted, in which the software in

(Continued on Page 68)

'JCLFlow' Documentation System By Consumer Systems Fits DOS

OAK BROOK, Ill. — Consumer Systems, Inc. has announced its JCLFlow application documentation system for IBM DOS installations.

At the same time, the company announced a new PL/I version of its Databasic utility system for OS installations and enhanced its Test/IMS software package.

JCLFlow automatically provides graphics system flowcharts and reports and has information management capabilities, a spokesman said. It provides a current picture of applications software, flexible reporting criteria, operations run information, system trouble shooting aids and source program scans. The package accepts DOS and Power JCL as input and uses the installation's standard labels and assignments. A permanent license costs $7,500.

Databasic is a utility package for creating, testing and maintaining IBM DL/1 data bases. The new version includes a module that is said to reduce CPU cycles used to move segments within the system, a checkpoint/restart capability, a parameter card generator, a compare/flatbase function that reports on changes to the data base and options that allow limiting of the subset data base size. A permanent license costs $23,500 for OS, $13,500 for DOS.

Enhancements to Test/IMS provide more efficient use of load library storage space, hard-copy support from any terminal and maintenance enhancements, the vendor said.

Features include full-screen support without TSO, replacement of standard dump with minidump and elimination of TSO for testing. A permanent license costs $16,000. More information is available through P.O. Box 3637, Oak Brook, Ill. 60521.

CAP Development Methodology Incorporates Reusable Code

By Lois Paul
CW Staff

NEW YORK — Netron, Inc., a Toronto-based software firm, introduced a software development methodology that incorporates reusable code at the recent Software Expo East conference here.

Like computer-aided design and manufacturing, Netron's Computer Aided Programming (CAP) methodology is said to provide a software development environment in which the computer handles the bulk of the work required to build and to maintain code. This custom code is spliced with reusable code to create application programs. The methodology's approach also is geared to permit creation of software development tools that will aid the development of business applications.

Paul G. Bassett, vice-president of software manufacturing for Netron, explained that the heart of the CAP system is a technology employing reusable software components called Frames. "A Frame may be thought of as a framework or architectural blueprint from which a particular kind of application can derive," he said.

Upward Compatibility

The upward compatibility of Frames eliminates the problem faced when changes to subroutines compromise programs written using an earlier version, Bassett said.

CAP retains the architectural structure and specifications defining each program, storing what is unique to a given program in one location for maintenance purposes. Bassett said the system was designed to build a program from specific, goal-oriented instructions supplied by the user. A Components Assembly Program then blends together standard frames and computer-generated and custom code into an application program written in a base language such as Cobol. These programs can be compiled and linked into computer-

(Continued on Page 75)

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DOS, OS Users Offered Line of Distributed Systems

RACINE, Wis. — Information Management Software Specialists, Inc. (IMSS) has announced a line of distribution systems for IBM DOS or OS users with command level CICS.

Called the Distribution System, the package includes a package and three separate modules that tailor the system for large-scale distribution. Customer Order Management includes modules and an interface to IMSS' accounts receivable package. The Customer Order Management package costs $58,900.

Additional modules include Pricing/Promotion, priced at $10,000; Pooling, priced at $15,000; and Bill of Lading Transmission, priced at $7,000.

The entire Distribution System costs $90,900 from Box 1633, Racine, Wis. 53401.

Comprised of Five Packages

XP System Fits DOS/VSE, OS

COLUMBUS, Ohio — A line of utility packages for IBM DOS/VSE and OS systems has been introduced by Goal Systems International

The Extended Productivity (XP) System comprises five packages for DOS/VSE: Faqs/XP, operational control; Flee/XP, library management; Faver/XP, Vsam data base integrity; JCLMan/XP, VSE job control and scheduling and Explore/XP, performance monitoring.

The OS XP System includes Faver/XP and PDSMan/XP for partitioned data set management.

Bundled, the DOS/VSE package starts at $451.50/mo on a renewable license or can be purchased for as low as $424.50 on a permanent license. For OS, bundled renewable licenses start at $262.50/mo or $246.75 purchase price. The firm is located at 5455 N. High St., Columbus, Ohio 43214.

Informatics Enhances 'Mark V'

WOODLAND HILLS, Calif. — Informatics General Corp. has introduced Release 4 of Mark V, its IMS application development system.

The system is said to provide automatic transparent data base access and allows programmers with minimal knowledge of IMS data base and communications processing to produce applications, the vendor said.

A design manual enhancement produces automated documentation when the program is compiled, a spokeswoman said. The documentation includes a description of the files, data bases and their usage and a cross-reference of the fields used in various screens and requests.

Release 4 is also said to provide the ability to read multiple messages and respond to multiple terminals in one execution of a program. The same screen can be used for several applications.

The enhancement is free of charge to current customers. Mark V costs from $80,000 to $100,000, depending on operating system, from the Software Products Group, P.O. Box 1452, Canoga Park, Calif. 91304.

ADP Unveils RDE Service For Payroll

CLIFTON, N.J. — Automatic Data Processing, Inc. (ADP) has introduced a payroll service said to allow users to enter raw payroll data into desktop computers on their own premises for transmission to and processing by ADP.

Remote Data Entry (RDE) reportedly is an alternative method of collecting and editing payroll data for businesses that are using the firm's batch payroll services, according to the vendor.

With RDE, data is entered directly into a desktop computer supplied by ADP — a Data General Corp. MPT/100 machine — thus reportedly eliminating the need to prepare and send handwritten forms to the service.

The computer edits the data and informs the user if corrections are needed, the vendor said.

Information is transmitted over dial-up phone lines to an ADP regional computing center. The system is said to include a security access system, meaningful field descriptions and custom-formatted screen input.

The service averages about $200/mo and does not include a telephone company modem. Based upon number of payees (processing volume), clients can receive a credit toward the cost of their monthly fee, in some cases negating or reducing the fee, a spokesman said. ADP is located at 405 Rt. 3, Clifton, N.J. 07015.

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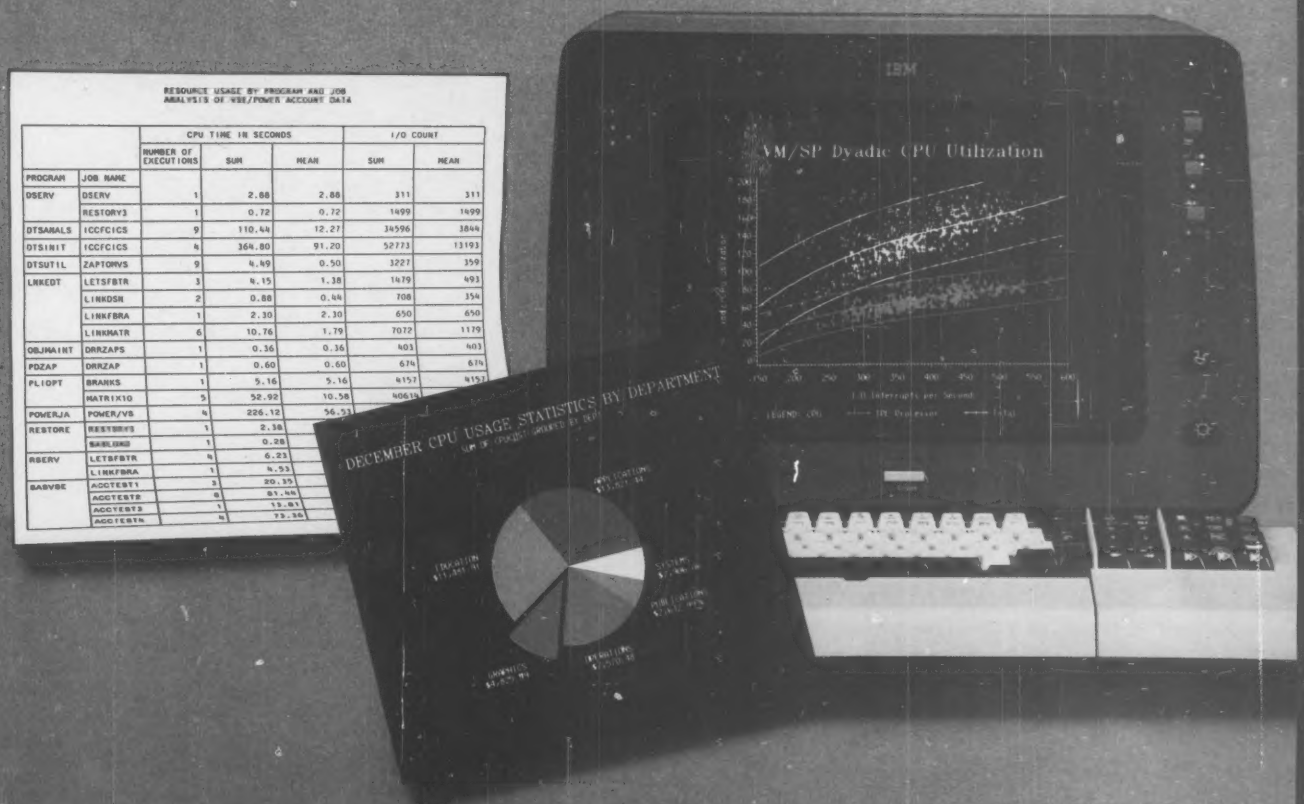
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Ingres Version 2.0 Announced For Users of VAX-11 Systems

BERKELEY, Calif. — Relational Technology, Inc. has announced Version 2.0 of Ingres, a relational data base management system (DBMS) for Digital Equipment Corp. VAX-11 computers.

The company also announced Report by Forms (RBF), a visual report editor; Graph by Forms (GBF), a graphics subsystem; and Applications by Forms (ABF), an applications development environment. All products are for use on Ingres.

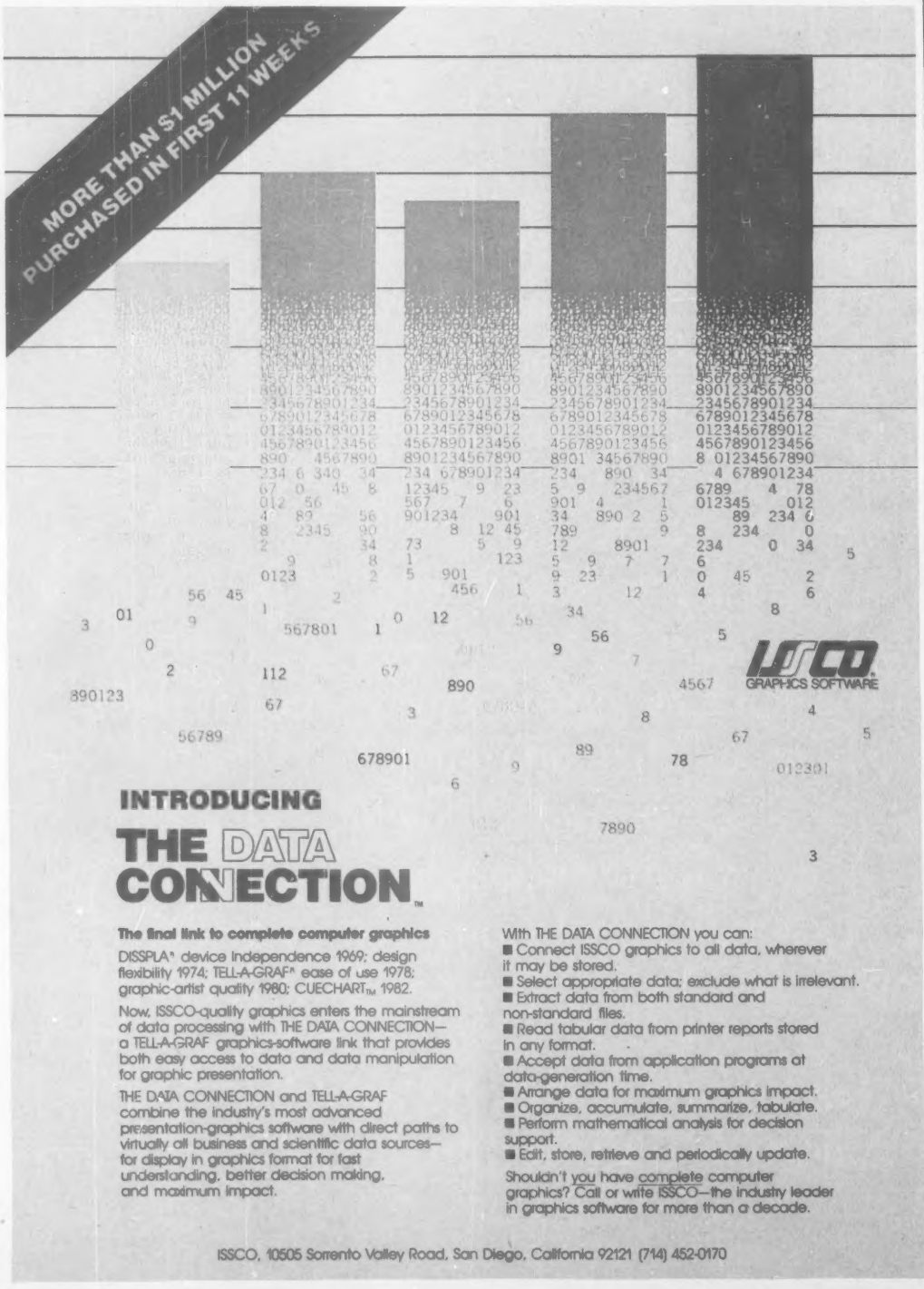
Ingres Version 2.0 includes improvements to the I/O subsystem and internal sort routines and the addition of new query-optimization strategies, a spokesman said. Concurrent access to data by multiple users has been improved and row size has been increased.

RBF provides a facility for visually editing report content and format in a menu-driven system. Users select report options from menus to determine page size, sort order and sequence, data selection criteria and the calculation of summary statistics. Available statistics include sums, counts, averages, minimums and maximums displayed as page totals, subtotals or grand totals.

GBF allows users to specify data for retrieval and the display format without conventional programming, the spokesman said. Formatting controls include graph type, size, layout and labeling. Most common graph types are available. The product supports most graphics terminals, plotters and hard-copy devices.

ABF is said to enable users to create, test, modify and store applications without coding in a computer language, the spokesman said. Applications are created by forms displayed on the screen. Forms cover the basic functions of application programs. They can be defined, modified and catalogued. Command menus may be defined to manipulate data in forms, invoke reports and graphs and control the sequence of forms. ABF automatically selects the appropriate compilers and linkers and identifies problems such as missing modules or faulty syntax, the spokesman said.

RBF and ABF are included at no extra charge with Ingres, which costs $35,000. GBF costs an additional $2,500 per supported license from 2855 Telegraph Ave., Berkeley, Calif. 94705.



'Calc/34' Model Gets Update

WINTER PARK, Fla. — Westmoreland Systems, Inc. has announced Version 4 of its Calc/34 financial modeling system for the IBM System/34.

Calc/34 is said to generate electronic spreadsheet projections automatically. It features logic capabilities, consolidation of models and access to user files.

Version 4 enhancements reportedly include an external table file, easier passing of data from one model to another and enhanced reporting capabilities.

Calc/34 Version 4 is priced at $2,500. It is available on a 30-day trial period for $100, from the vendor through Suite I, 228 Park Ave. N., P.O. Box 2726, Winter Park, Fla. 32790.

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From Boole & Babbage

Release 4.0 of 'Secure/CICS' Out

SUNNYVALE, Calif. — Boole & Babbage, Inc. has announced Release 4.0 of Secure/CICS, an on-line security software package for IBM's CICS.

The enhancement contains Multiple Region Operation (MRO) support, providing centralized administration of security in a multiple-CICS environment, a spokesman said.

The new release also contains password facility enhancements including an automatic password expiration option that enables system-wide specification to require periodic password change.

Secure/CICS now supports the use of identification badges and cards for password changes and sign-on through the operator identification card reader and magnetic stripe reader features, the spokesman noted. An activity logging interface is included which allows user applications to record activity on the Secure/CICS log file. The messages may then be displayed on-line.

For OS operating systems, Secure/CICS is priced at $18,000 (MVS) and $13,500 (VS1). A DOS version costs $11,500 from 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

Release 8.1 of 'PMM' System Designed for 4300, 30 Series

ATLANTA, Ga. — American Software, Inc. has announced Release 8.1 of its Purchasing and Materials Management (PMM) system.

The PMM system, for use on the IBM 4300 and 30 series, includes modules for material request, purchasing, inventory control and accounting, procurement matching, accounts payable and capital project accounting.

The material request system reportedly processes requisitions for purchase requests and requests for material from inventory; the purchasing system creates, tracks and analyzes purchase orders; inventory control and accounting keeps up with perpetual balances; and procurement matching compares purchase orders and receipts to the invoice data.

The accounts payable and capital project accounting systems provide invoice processing and project tracking capabilities, according to a spokesman for the vendor.

The price for each system ranges from $20,000 to $70,000. More information is available from the vendor at 443 E. Paces Ferry Road, Atlanta, Ga. 30305.

FTU Available For System/34

LITTLE ROCK, Ark. — A File Transmission Utility (FTU) for the IBM System/34 is available from Arkansas Systems, Inc.

FTU reportedly allows the transmission of any size data file from one System/34 to another. With the utility, the sending system operator needs only to know the name of the data file, according to the vendor.

FTU then selects and transmits the data file to the receiving System/34. The operator can either rename the transmitted data file or replace the existing file.

FTU costs $190 from the firm at Suite 202, 8901 Kanis Road, Little Rock, Ark. 72205.

Users to Get Diverse Info

(Continued from Page 61)

creasingly will be used to define goals and prepare strategies. The software "actually does cash outlay and management for you rather than just planning parameters."

In line with this new role, managers can expect few enhancements to the basic functions the packages perform, she predicted. However, tremendous strides will be made in the breadth of information that can be accessed and manipulated.

Kitson advised managers, "Now more than ever, look at the vendor rather than the package." She said the dominant vendors of the future will be those who link information tools together in new and different ways. "We're sitting on so many gold mines and we don't even know it," she said. When looking at a vendor, ask, "Where are they going to be in two or three years and what can they supply me?" she advised.

DP managers also need to improve their sales skills to ensure that management gets the financial information tools it needs, she advised. "First find out what [management's] needs are," she said. "I'd suggest you take [all the literature] you can and disseminate it to them."

Apparel Package Serves VAX Line

SANTA MONICA, Calif. — Datapparel, Inc. has announced an automated apparel package for Digital Equipment Corp.'s VAX-11 line of processors.

The package is an on-line interactive group of modular programs written in Cobol. The programs are designed to aid apparel manufacturers in controlling day-to-day processing, the vendor said.

The entire package costs $100,000, but individual modules are available separately. The firm is located at Suite 302, 1300 4th St., Santa Monica, Calif. 90401.

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'MPEX/3000' Utility for HP 3000 Users Enhanced

LOS ANGELES — A utility for the Hewlett-Packard Co. HP 3000 series minicomputers has been enhanced to increase programming flexibility and streamline systems development and maintenance.

With the existing version of its MPEX/3000 package, Vesoft Consultants, Inc. has added the ability for programmers to operate on several files simultaneously, a company source said. The utility's latest release allows 3000 series users to purge, copy, rename or otherwise modify multiple files in one operation.

With MPEX's previous releases, programmers had no alternative but to execute these and other commands on one file at a time, the spokesman said.

The addition of a file set handling capability "substantially" boosts the speed and efficiency with which programs can be written under HP's Multi-Processing Executive operating system, the source said. The extent of that improvement, however, is too application-dependent to quantify precisely.

MPEX/3000 has also been enhanced with the addition of previously unavailable selection criteria that reportedly allow programmers to gain access to all files created by a particular individual.

The utility costs $1,500 to install in a primary site and is available from Vesoft at 506 N. Plymouth Blvd., Los Angeles, Calif. 90004.

Dump System Out for VM/SP Users

ARLINGTON, Va. — VM Systems Group has announced a software product that allows a system dump while normal operations continue.

Now available for the IBM VM Systems Product (VM/SP) operating system, V/Snap is a new VM/SP Control Program command that reportedly makes it possible to obtain a formatted system dump for analyzing degradation problems such as slow or uneven performance, hung devices or users and storage management errors without causing a system failure.

V/Snap is implemented as one new Control Program module and an update to one existing module. It can be used on VM/SP Releases 1.0 and 1.1, and a VM/SP Release 2.0 version is under development, according to a vendor spokesman.

V/Snap costs $1,190; source code and updates are furnished and maintenance necessary to conform to IBM system changes will be furnished quarterly, a vendor spokesman said.

More information is available from VM Systems Group, 3123 N. Military Road, Arlington, Va. 22207.

Banks Get Portfolio Service For Two-Year Projections

NEW YORK — Chase Econometrics/Interactive Data Corp. has developed a service to support domestic or international financial institutions in managing their asset/liability portfolios.

The Bank Risk Management System (BRMS) simulates future earnings over a maximum of 24 months by processing balances, forecast rates, maturities, new volume allocation and strategies in conjunction with each other.

BRMS is said to be customizable by the client, can support a variety of management styles and is applicable to very small and very large institutions; it also offers runoff/rollover capabilities, equation-oriented funding/volume/rate strategies and recognition of different tax structures.

Accessible by any terminal, the service carries no subscription fee. Costs are estimated to run from $500/mo to $3,500/mo, depending on the size of the bank, a spokeswoman said. The firm is located at 22 Cortlandt St., New York, N.Y. 10007.

Universe Systems Get RM/Cobol

NATICK, Mass. — Charles River Data Systems, Inc. has announced a version of Ryan-McFarland Corp.'s Cobol (RM/Cobol) for its Universe line of 32-bit computer systems.

RM/Cobol runs under the company's Unos operating systems, a Unix-compatible system with real-time, transaction-oriented capabilities. In multiterminal systems, RM/Cobol can run simultaneously with other supported languages including Basic, Pascal and Fortran.

RM/Cobol is available for $1,300 on the Universe line, which the spokesman said costs under $10,000 from 4 Tech Circle, Natick, Mass. 01760.

'Robot38' Package Handles Scheduling on System/38

MINNETONKA, Minn. — Help/38 Systems, a division of Advance Circuits, Inc., has introduced a software package for the IBM System/38 computer.

Robot38, an automated computer operator, is an integrated system that executes programs or command language commands at prescheduled times daily, weekly, monthly or on any selected date, a vendor spokesman said.

Its command execution function executes command language commands individually or in a series, reducing the need to write or compile command language programs, according to the spokesman for the vendor.

User programs can communicate with Robot38 through its Autorun facility. Programs run during the day can set up Robot38's job schedule for later that day or night, the spokesman for the firm said.

The system's displays and printed reports document both the present week's job schedule and the prior week's run history.

The package is available at a monthly license fee of $20 per CPU or a one-time charge of $1,190. Help/38 Systems is headquartered at 15102 Minnetonka Industrial Road, Minnetonka, Minn. 55343.

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Program Generator System Out for Burroughs CPUs

TALLAHASSEE, Fla. — ESI has announced Proxy, an on-line program-generator system for Burroughs Corp. mainframes.

Proxy allows users to create on-line, interactive, transaction-based programs in Cobol, a spokesman said.

Capabilities include the generation of structured Cobol source code with internal documentation, provision for system documentation and the capability for including specialized user-provided source code in Proxy-generated programs, the vendor said.

Proxy generates programs with interfaces for Burroughs' operating systems, including Gemcos, NDL or any participating or nonparticipating Master Control System, the spokesman said.

Programs support Burroughs DMS II and IBM's Isam and user-defined file access techniques. Code is cross-machine-compatible over all three Burroughs mainframe series, the vendor said.

The price for Proxy ranges from $20,000 to $30,000 from ESI at 1801 S. Gadsden St., P.O. Box 5617, Tallahassee, Fla. 32301.

'Eunice' Users Form Group

PALO ALTO, Calif. — The Wollongong Group has announced the formation of a users group for Eunice, a software package developed by the Stanford Research Institute for transporting Bell Laboratories Unix software to Digital Equipment Corp.'s VAX-11 superminis operating under VMS.

Services and activities of Eunishare will include a worldwide newsletter, a shareable user program library, an annual convention and special interest group and local chapter meetings, according to a group spokesman.

Users qualify for membership by working in a Eunice site or through some other direct interest in Eunice, the spokesman said.

There are no membership fees, and members become eligible to receive the newsletter and program library listing.

More information is available from Eunishare, c/o The Wollongong Group, 1135A San Antonio Road, Palo Alto, Calif. 94303.

Utility Targets System/34

ROCK ISLAND, Ill. — Valley Software, Inc. has announced Compare/34, a utility for System/34 users that compares programming changes and output.

Compare/34 compares spool files, disk files, library members and library directories, a vendor spokesman said. Included with Compare/34 is a file print module that prints selected records from any disk file, a vendor spokesman said.

The cost of Compare/34 is $299 from Valley Software Inc., P.O. Box 909, Rock Island, Ill. 61201.

ADS Release Said to Aid Paperless Documentation

ATLANTA — Documentation Systems, Inc. has announced a release of its Automatic Documentation Systems (ADS) said to facilitate paperless documentation.

ADS comprises four separate products that run independently or as an integrated system, according to a spokesman for the firm. ADS reportedly interprets a job's Job Control Language and optional input to produce a standardized set of documentation for IBM's MVS, VS1 or SVS operating systems.

Release 3.0 features on-line interfaces to other system components, standardized job recovery procedure generation, load module analysis and a foreground-initiated JCL validation.

ADS costs from $6,500 to $19,600, depending on components. Rental and lease plans are also available. Additional information can be obtained from the ADS marketing group: Leland Computer Services, Inc., Suite 146, 8601 Dunwoody Place, Atlanta, Ga. 30338.

Accounting System Runs on VS

BURNABY, B.C. — A route accounting system for Wang Laboratories, Inc. VS systems has been developed by P.M. Sulcs & Associates Ltd.

The on-line, interactive Route Accounting System is said to combine inventory, order entry and order management. The system is suited for the food and beverage industry, according to the vendor.

Features include rerouting of orders, super-route accumulation, summary of purchases for statements, wholesale and corporate rebating including drop-delivery rebating and call-order schedules by operator.

The system costs $40,000 with multi-CPU rates available from the firm at Suite 112, 4240 Manor St., Burnaby, B.C., Canada V5G 3X5.



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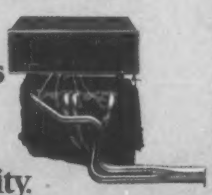
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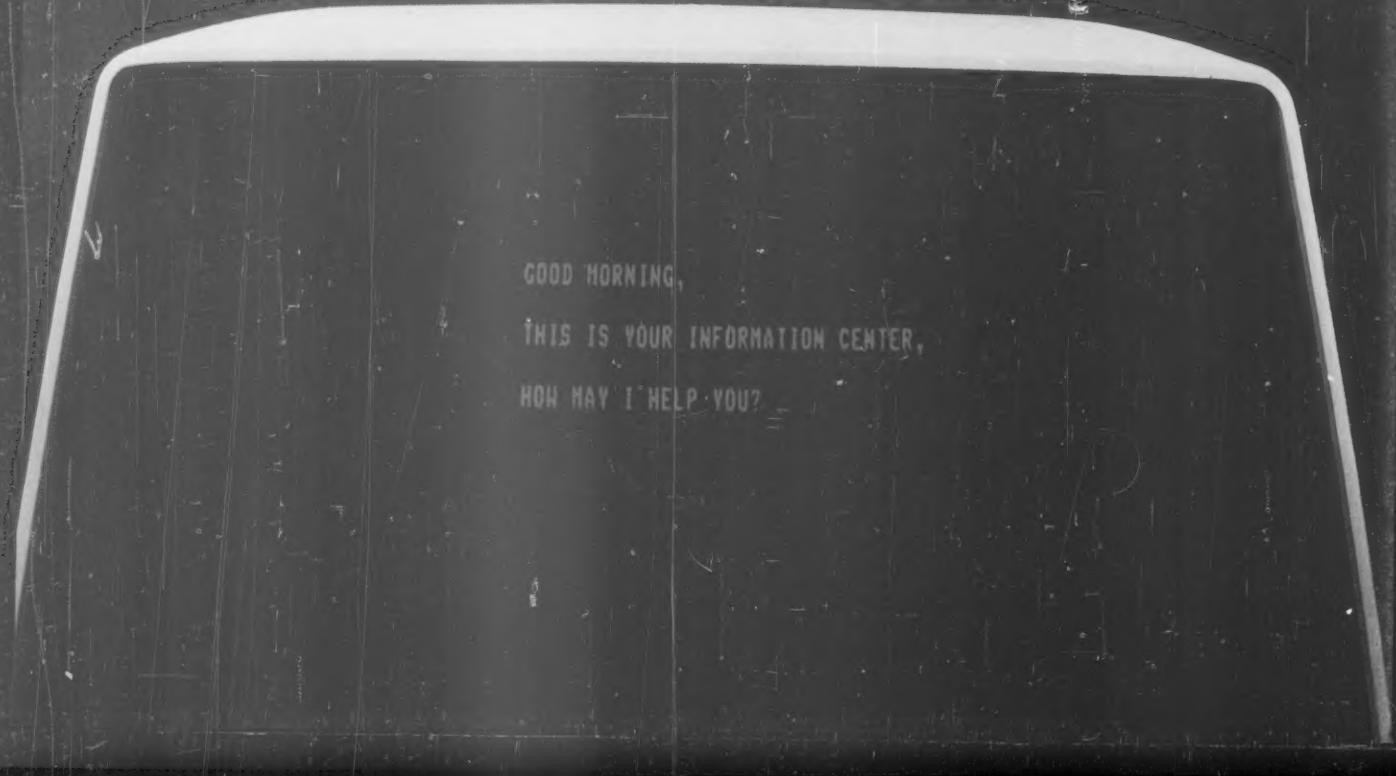
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'Topdoc' Package Updated

LOS ANGELES — DP Software Exchange, Inc. (DPSE) has announced the latest release of its computer-generated operations documentation package, Topdoc 4.1, said to contain significant enhancements over previous versions.

Topdoc was designed and developed for IBM DOS/VS and DOS/VSE systems and is said to provide standardized operations documentation and a fill-in-the-blanks turnover procedure for programming staff. Enhancements included in Release 4.1 are computer/machine scheduling with automatic job scheduling, cross-reference reports, master systems lists and job flow chart diagrams, the vendor said.

Multiple machines or multiple CPUs may be utilized, each having multiple partitions, the vendor said. Version 4.1 of Topdoc leases for $195/mo from DPSE at P.O. Box 34863, Los Angeles, Calif. 90034.

Personnel Aid Fits System/34

LAS VEGAS — Computer Information Systems (CIS) has announced its Automated Payroll and Personnel Systems written for the IBM System/34.

The CIS system reportedly allows users to create a human resource data base as well as control all areas of specialized payroll requirements, such as tips, temporary help, accruals and unions. Features include control of up to 999 locations, a report generator, general ledger interface and user-controlled security.

Complete education, documentation, training and tax service are provided by the vendor. The Personnel System is available as a stand-alone for $3,750; combined with the Automated Payroll System, the cost is $7,600, a spokeswoman said. The first year of maintenance is included in the price. CIS can be reached through P.O. Box 18000, Suite 84, Las Vegas, Nev. 89114.

Tool Analyzes Mailing Costs

LOMBARD, Ill. — A mass mailing optimization package that runs on IBM mainframes in OS and DOS environments has been developed by List Processing Co., Inc.

The Mailing Optimization Procedures System (Mops) reportedly analyzes mass mailings to determine the least expensive sacking procedure. Mops analyzes postage, handling and other costs for any second- or third-class mailing.

Mops costs $10,000 from the vendor at 555 Waters Edge, Lombard, Ill. 60148.



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For Geometric Modeling

Formats Enhance 'Romulus'

SALT LAKE CITY, Utah — Evans & Sutherland, Inc. has announced two formats of its Romulus solid geometric modeling program.

Executable Romulus, a binaries-only version, is available for applications requiring no modification to the standard capabilities. Programmable Romulus is enhanced with enough source software to facilitate an integration of the solid geometric modeling capabilities into an application solution.

Romulus offerings are now available on the IBM 4300 and 30 series; MVS and VM/CMS are both supported. The software is also available on Digital Equipment Corp. VAX-11/780, 11/750 and 11/730, Evans & Sutherland PS 300 graphics system and Tektronix, Inc. 4010 and 4014 terminals.

Romulus prices start at $30,000 for a perpetual license from P.O. Box 8700, 580 Arapeen Drive, Salt Lake City, Utah 84108.

'Datascan' Release Announced

ATLANTA — Datascan America has announced Release 4.0 of its Datascan information retrieval and reporting system for users of Datapoint Corp. and IBM System/34 minicomputers.

The new release includes a dictionary program that is said to simplify dictionary creation and maintenance and supports multiple record-type files. Report writer features and numeric editing capabilities have been added. Datascan Graphics, an option, can be added for data analysis with bar graphs and histograms.

Prices start at $1,850 from Suite 222, 4675 N. Shallowford Road., Atlanta, Ga. 30338.

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CAP Methodology Answer to Netron's Wish List

By Lois Paul
CW Staff

NEW YORK — It was the quest for truly reusable code that led Netron, Inc. to devise its Computer-Aided Programming (CAP) methodology.

According to Paul G. Bassett, vice-president of software manufacturing for the Toronto-based firm, the product essentially was based on a wish list his development group compiled after they tried out traditional approaches for getting around the maintenance problem inherent in software development efforts. What it came up with is reusable code.

Among the traditional approaches Netron tried were subroutines. Although they are a step in the right direction, Bassett said, they lack the customizing facility that true reusable code requires. When customization of subroutines is required, the programmer can either change it and "clobber" all the programs that called this code or store a slightly altered version of it in the subroutine library. "Soon you begin to drown in a library with a sea of routines."

The issue of reusable code has not really been addressed by high-level and fourth-generation languages, according to Bassett. He cited the nature of these languages as their own downfall. "Because they have powerful verbs and operators, these act as sledgehammers. One does a tremendous amount. But in sophisticated systems, often one wants a tack hammer. A delicate interplay is required and precise notation. Fourth-generation languages are clumsy languages because all you do is hit things with a sledgehammer.

"Code generators have not taken the world by storm," he continued, "because they only help programmers at the beginning stages." The least time-consuming part of the programmer's job is writing programs rather than polishing and maintaining them, he said.

Development Methodology Incorporates Reusable Code

(Continued from Page 61)

executable versions.

According to Bassett, the specific source text retained in a computer-generated program is efficient since the system drops irrelevant or redundant logic. Common code is stored only once in production libraries, he noted.

Netron currently has CAP products for interactive screen input and output, file maintenance and reporting implemented on Wang Laboratories, Inc.'s VS line of minicomputers. These tools are accessed by the Capenvironment, a sort of programmer's workbench.

The entire package is available for $30,000 from Netron at 99 St. Regis Crescent N., Downsview, Ont. M3J1Y9, Canada.

Security Service, Guide Available

PENNSAUKEN, N.J. — A service that addresses the management and implementation of data security and control systems is available from Auerbach Publishers, Inc.

Practices and Methodologies: Data Processing Security and Control; An Analysis, Design and Evaluation Guide is included with the service. It reportedly provides the information to identify assets open to risk, analyze the level of exposure to threat and determine what assets have priority.

The service also will help subscribers match potential safeguards to potential risks; select effective safeguards based on objective cost/benefit analysis; outline software, hardware, personnel and procedures required to implement a plan and construct objective acceptance.

The service includes access to the firm's Telephone/Telex Information Service and two on-line newsletters. The service costs $225 with a free no-risk 15-day trial available. Auerbach is located at 6560 N. Park Drive, Pennsauken, N.J. 08109.

Options Announced For Aims Subscribers

CANOGA PARK, Calif. — Informatics General Corp. has announced that Supplied User Option (SUO) software is available to subscribers of the company's Annual Improvement Maintenance and Support (Aims) service.

SUOs provide more simplified installation of Informatics software, extension of the products to a wider scope of applications and the ability to prototype future product enhancements, the company claimed.

SUOs, which come in the form of application source code, user routines and installation support aids, are available for the company's Mark V, Mark IV, Answer/2, Answer/DB, Trans IV, Inquiry IV/IMS and Shrink products.

Prices vary depending on the products and options involved. Informatics is located at 21031 Ventura Blvd., Woodland Hills, Calif. 91364.



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On May 18th, *Computerworld* launches its first communications satellite . . .

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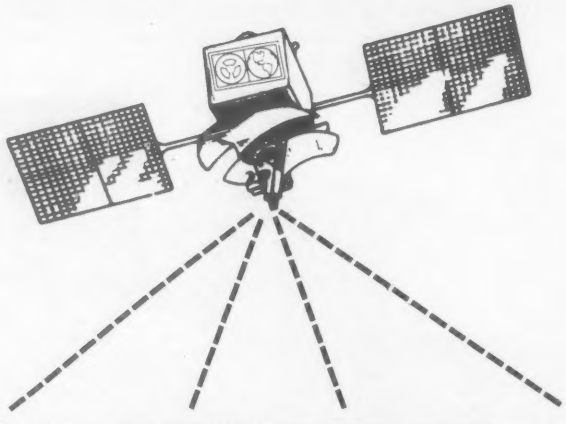
We are launching a new publication devoted to in-depth coverage of the broad spectrum of voice, image and data communications. *Computerworld On Communications* will examine communications issues, technology and applications from a systems perspective.

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Remember to look for *Computerworld On Communications* on May 18th and again on September 28th (advertising deadlines April 8th and August 19th).

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To Lessen Data Distribution Woes

Snet May Acquire 40% Interest of DTI

By Bruce Hoard
CW Staff

NEW HAVEN, Conn. — Innovative Southern New England Bell (Snet) may mitigate the problem of local data distribution by acquiring a 40% interest in Digital Termination Service, Inc. (DTI).

If the iconoclastic Bell operating company decides to go through with the deal, it would be buying into a company that that has been authorized by the Federal Communications Commission (FCC) to build and maintain intrastate high-speed digital data transmission facilities in 99 of the largest U.S. metropolitan areas.

The local data distribution problem has been a thorn in the side of long-haul common carriers such as satellite companies and other wideband common carriers. They move information at high speeds over thousands of miles only to be frustrated by drastically reduced transmission speeds in the local loops.

Digital termination systems (DTS) such as those to be offered by DTI early next year bypass the local loops by transmitting data in microwaves from local earth stations directly to the final termination point at customer premises.

Snet is allowed to offer such advanced services because it is not burdened by restrictions placed on the other 22 Bell operating companies AT&T is spinning off as part of its reorganization, according to spokesman Mike McCann. Only Snet and Cincinatti Bell have been spared the restrictions, he said.

The reason for Snet's unusual status is its unusual relationship with AT&T — Bell owns only 24% of Snet. As a result, the Bell operating company has been designated a "nondominant carrier," in the modified final judgement governing the AT&T breakup.

McCann said Snet — whose operating area lies within the state of Connecticut — does not foresee DTS-type services obsoleting the less sophisticated local loops. "We see a coexistence in the future," he declared.

In a press release issue describing the possible deal with DTS, Snet Chairman and Chief Executive Officer Alfred Van Sinderen mentioned the possibility of linking DTS with "leased interstate digital services." That combination would allow DTS to provide direct coast-to-coast digital service.

Since the beginning of the year, the operating company has made a series of

(Continued on Page 80)

Concord Data Offers Token/Net To Comply With IEEE 802, Ecma

WALTHAM, Mass. — Concord Data Systems has unveiled a local-area network communications system designed to meet the needs of factories, engineering facilities and offices, especially in a medium-size to large campus or multiple-computer business environment.

Token/Net is reportedly the first local-area network to comply fully with the IEEE 802 and European Computer Manufacturers Association standards for local networks.

The network features a data transfer speed of 5M bit/sec at distances up to 20 miles and uses the token passing line access scheme, which defines a set of rules for sharing the high-speed network bandwidth. Token passing is a form of distributed polling that is highly controllable

(Continued on Page 83)

Data, Voice Time Division Mux Allows Link Minus Leased Lines

HYANNIS, Mass. — Fibronics International, Inc. has introduced a data and voice time division multiplexer said to allow users to communicate within their own facility without using leased lines.

The FM-832 multiplexer can transmit up to 128 data channels, 128 voice channels or any combination of data and voice over a dual coaxial or fiber-optic cable, according to a vendor spokesman. Fiber-optic cable allows transmission distances up to two miles and coaxial cable up to ½ mile.

Each port is said to be independent. Available rates exist at 64K bit/sec in the synchronous mode and 1,200 bit/sec in asynchronous transmission in the auxiliary ports.

The multiplexer is enclosed in a 19-in. rack mount and can accept up to eight communications modules. Each module can support voice or data transmission. Depending on the application, the data modules can support RS-232C or RS-449 with eight to 16 ports per module, a vendor spokeman said.

Prices for the multiplexer start at $5,600. It is available from Fibronics International Inc., 218 W. Main St., Hyannis, Mass. 02601.

IBM to Operate Net In 1984, FCC Says

WASHINGTON, D.C. — IBM plans to begin operating a data communications network next January, the FCC reported here last week.

Utilizing two-way radio channels and portable transceivers equipped with alphanumeric keyboards and small display screens, the system will enable IBM service technicians to communicate on-line with each other and with a company computer center. Motorola, Inc., which is building the terminals for IBM, plans to market them to others later this year, according to a spokesman. He indicated that traveling sales personnel would be likely prospects.

The system will be used to assign IBM field service technicians who work on intermediate and large-scale information processing systems, said a company spokesman. It will also handle a variety of communications chores that

(Continued on Page 80)

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Stratus Unveils Adapter, SDLC Link, Others

NATICK, Mass. — Stratus Computer, Inc. has unveiled a communications line adapter, Synchronous Data Link Control (SDLC) product programmable bus interface, X.29 software support, GTE Telenet communications Corp. certification and a remote service network.

The C107 Smartsync line adapter supports communications protocols at speeds up to 56K bit/sec, performing the line handling and protocol tasks normally done on a CPU or communications subsystem. A Stratus/32 Continuous Processing System processing module can support up to 12 of the adapters, while a Stratus/32 system of 32 processing modules can support up to 384. The C107 Smartsync line adapter is available immediately and priced at $1,500.

The SDLC software product is used in conjunction with the Smartsync communications line adapter. It is said to form the foundation for future Stratus Systems Network Architecture (SNA) products. It will cost $3,000 and will be available in the third quarter of 1983.

The Programmable Stratabus Interface (PSI) is a high-speed, programmable interface between the Stratus/32 bus and up to four non-Stratus peripheral devices. It is a full-size printed-circuit board that plugs into the Stratus/32 backplane. It can transfer data at up to 4M byte/sec, the vendor claimed. Available in September, it will cost $15,000.

The X.29 networking facility is designed for the Stratus/32 and uses a single synchronous communications line to connect multiple remote terminals to application programs running on the Stratus/32. The remote terminals can be connected through a proprietary packet assembler/disassembler (PAD) or a public or private packet switching network. It will be available for license in June 1983 for $1,000.

The Stratus/32 system has been certified for connection to the GTE Telenet Communications Corp. Telenet public packet switching network. The certification allows nodes using the vendor's Stratanet software to communicate using Telenet by means of a direct interface to the network.

With the new remote service network, Stratus computers with hardware or software failures will automatically dial up and request service. The service is free of charge to the vendor's maintenance customers.

Stratus is located at 17-19 Strathmore Road, Natick, Mass. 01760.

Modem Line, I/O Card Out

BUFFALO, N.Y. — Universal Data Research, Inc. has announced a line of modems and an I/O card that automatically selects the correct transmission rate.

The line of seven modems is designed to connect to any RS-232 interface terminal or processor using telephone lines. Three of the modems feature transmission rates of 300 bit/sec and are available in half- and full-duplex modes with originate or autoanswer versions.

In addition, the vendor is offering two modems designed to operate at 1,200 bit/sec. These units provide full-duplex operation with a switch-selectable local echo, the vendor said.

The vendor is also offering two modems that are compatible with Bell 212A modems. Those modems are available in autodial and autoanswer versions and can be equipped with an I/O board that automatically tests the transmission rate and makes adjustments, the vendor said.

The Universal Data Research modems cost between $149 and $599, the vendor said from 2457 Wehrle Drive, Buffalo, N.Y. 14221.

Artel Module Sends Video

WORCESTER, Mass. — Artel Communications Corp. has introduced a fiber-optic computer graphics communications system said to transmit high-resolution computer-generated video further than can be transmitted with conventional coaxial cable.

The T/R-2011 is a plug-in transmit/receive module that transmits RS-170 video up to 10,000 ft over fiber-optic cables. Both red-green-blue color and monochrome video signals can be handled by the system.

Prices for the transmit/receive modules begin at $1,850. More information is available from Artel Communications Corp., P.O. Box 100, West Side Station, Worcester, Mass. 01602.

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IBM Plans to Operate Network in 1984

(Continued from Page 77)
occur during the service call — for example, the serviceman will be able to input orders for new parts. The spokesman said IBM expects to reap substantial benefits from the system — notably a reduction in service order paperwork and an increase in the productivity of its field service staff.

In addition to a qwerty keyboard and two-line, 54-char. LCD screen, the terminal is said to be programmable in IBM's 6800 family assembly language and can be acoustically coupled or hardwired to a standard telephone. The terminal measures 4 in. by 7 in. by 1.5 in. and weighs 1.5 lb, the IBM spokesman said. He added that the company expects to have the network in full operation by mid-1985, at which time about 250 cities will be interconnected.

The area serviced by the network will be divided into zones; within each there will be a transmitter and one or more receiving sites. These facilities will enable terminal users to communicate with each other and with a centrally located IBM computer that handles work assignments, parts orders and related message traffic.

A "general communications controller will track each portable terminal so that messages and acknowledgements to and from field personnel are directed to the appropriate zone," said the FCC, which released an order last week permitting IBM to implement the system.

Micro-Baud Offers Interactive Modem

SANTA CLARA, Calif. — Micro-Baud Systems, Inc. has announced an interactive, stand-alone 212A modem said to feature synchronous and asynchronous modes.

The unit reportedly includes pulse or tone and combinations; 8-, 9-, 10- or 11-bit standard operation; and parity selection.

The Model MB80514 is list-priced at $675 from 3393 De La Cruz Blvd., Santa Clara, Calif. 95050.

Snet May Get DTI Interest

(Continued from Page 77)
moves designed to push itself away from being only a horizontal supplier of telephone service. They include the formation of a susidiary known as Soneacar Systems, which will market sophisticated customer premises equipment such as private branch exchanges (PBX).

Toward that end, it has signed agreements with Northern Telecom, Inc., Mitel Corp. and TIE/Communications, Inc. which call for those PBX makers to sell their systems to Snet, which will in turn market them to its customers.

The firm is reshaping its future relationship with Western Electric, the manufacturing arm of AT&T that has traditionally provided PBX equipment to Bell operating companies. According to McCann, agreements between all the Bell operating companies and Western Electric are expiring Jan. 1, 1984.

Negotiations are currently being carried out to establish a new agreement. "We intend that Western Electric, even after the breakup of the Bell system, will be a supplier of Southern New England Telephone," he commented.

Snet has until mid-April to consider the 40% DTI acquisition. In the interim, it is studying DTI's business plans as well as its own future. McCann said the company might nix the deal for the same reason it has stayed away from manufacturing its own products — the fear of being overextended.

No matter what the final decision will be, Southern New England Telephone Co. is racing full speed into the unregulated communications future.

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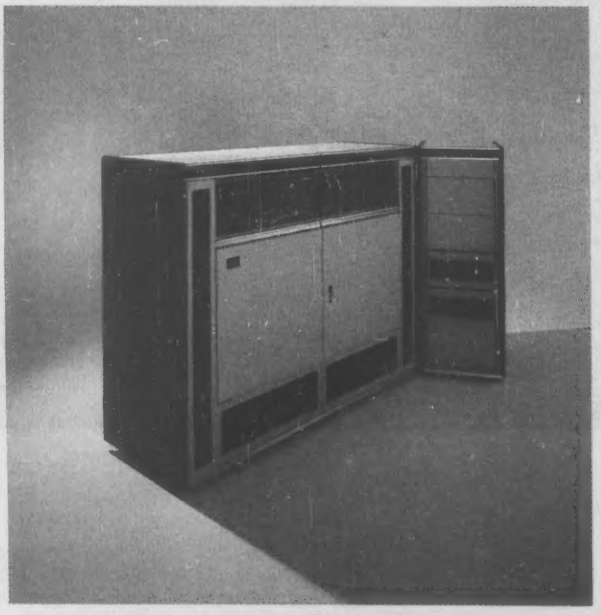
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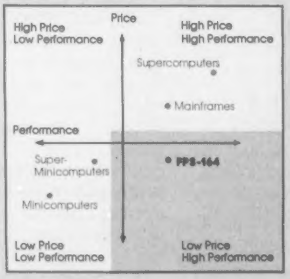
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Package Boasts IBM CPU, Ethernet Net Connection

AUSTIN, Texas — Auscom, Inc. has introduced a communications software package it claims will connect any IBM mainframe to the Xerox Corp. Ethernet local-area network.

The interface utilizes direct channel connection to an IBM mainframe and Ethernet hardware and software on the outboard side.

It is available for $17,000 from Auscom Inc., Suite 102, 2007 Kramer Lane, Austin, Texas 78758.

Protocol Converter Gets Enhanced

CAMBRIDGE, Mass. — ICCI has announced both enhancements and a price reduction for its protocol converter.

The CA20 protocol converter replaces an IBM 3274 Model 51 cluster controller operating with either Binary Synchronous Communications (BSC) or Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) protocol in an IBM 3270 network, according to a vendor spokesman.

The cost of the CA20 protocol converter has been reduced 20% to $6,900 for either the BSC or SNA/SDLC, the spokesman said. ICCI is located at 196 Broadway, Cambridge, Mass. 02139.

Filtering Screen Offered

SANTA CLARA, Calif. — A filtering screen said to eliminate glare and sharpen the image on a CRT screen is available from Inmac Corp.

The Glare Sentry incorporates a circular polarizer and is said to trap up to 99% of reflective light.

Priced at $139, the screen is available from Inmac, Department 82, 2465 Augustine Drive, Santa Clara, Calif. 95051.

CRT Unit Labels Maps

BEAVERTON, Ore. — Tektronix, Inc. has introduced a CRT terminal said to provide high-density graphics and high-density alphanumerics for labeling designs and maps.

The 4116A Computer Display Terminal also features a 635mm Direct View Bi-Stable Storage Tube said to provide a 4,096- by 3,120-pixel viewable resolution and smooth contour lines. More than 15,000 characters can be displayed simultaneously, according to a vendor spokesman.

The terminal is priced at $21,400 from Tektronix, Inc., P.O. Box 500, Beaverton, Ore. 97077.

Alpha Micro Adds AM-60

IRVINE, Calif. — Alpha Micro, Inc. has announced a CRT terminal that can reportedly be used with any computer system in the firm's line.

The AM-60 features a tilting/rotating screen display, detachable keyboard, horizontal/vertical split screen capability and line-drawing character set. It also features programmable function keys and programmable status lines.

The unit reportedly can be used with any Alpha Micro system from the seven-user desktop computer to the 60-user AM-1062 supermicro.

The price ranges from $880 to $1,000, depending on capabilities, a spokesman said. The firm can be reached through 17332 Von Karman, P.O. Box 18347, Irvine, Calif. 92714.

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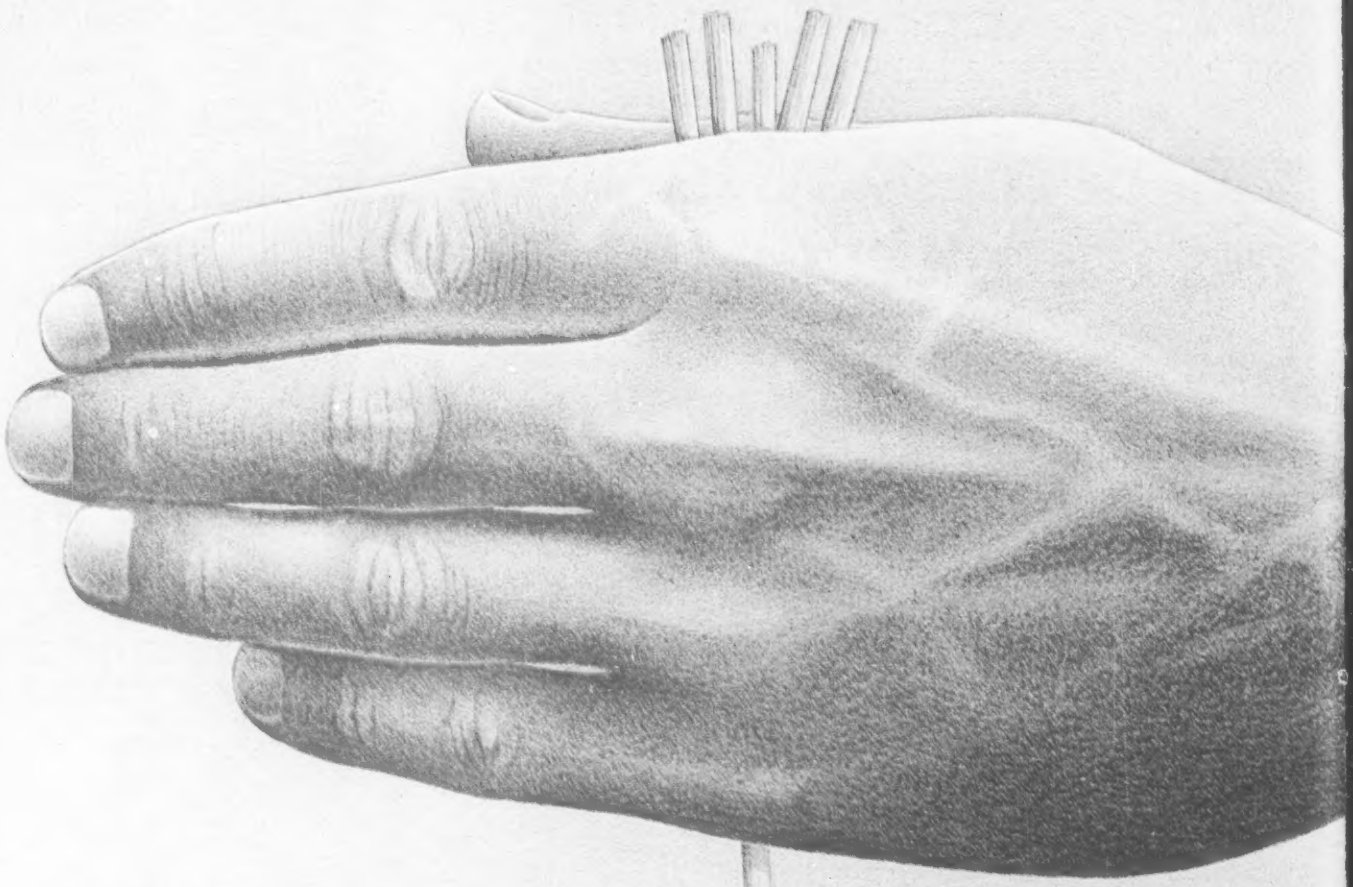
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For IBM Micro

Modem Runs at 300 Bit/Sec

VAN NUYS, Calif. — Anchor Automation, Inc. has unveiled a modem for the IBM Personal Computer said to feature a transmission rate of 300 bit/sec and having Bell 103 compatibility.

The Signalman Mark VI modem reportedly also offers tone and pulse dialing and full autoanswer/autodial programmability. It was designed for direct connection to any modular telephone and wall jack and fits directly into any of the expansion slots in the Personal Computer's Systems Unit, thereby replacing all communications hardware inside the computer, the vendor said.

The Mark VI also eliminates the need for an asynchronous communications card in one of the remaining slots by incorporating the necessary asynchronous communications circuitry as part of its overall design.

Along with the modem and software, the vendor is also providing a free subscription to The Source, a data base designed for personal computer users. The Signalman Mark VI, complete with software, instruction manual and The Source subscription, costs $279. Anchor Automation is located at 6624 Valjean Ave., Van Nuys, Calif. 91406.

Recorder Stores Status Changes

CARROLLTON, Texas — Beta Products, Inc. has introduced a sequential events recorder (SER) said to feature a distributed event memory technique capable of storing up to 128 status changes on each input.

The Betalog Model 420-I SER monitors discrete inputs and records status changes with true 1 msec resolution, the vendor claimed. It has a capacity of up to 128 inputs in a single cabinet and is expandable to 1,024 inputs. An auxiliary RS-232 output port allows duplication of information.

The starting price for the recorder is $5,700 from Beta Products, Inc., P.O. Box 5004, 1615 W. Beltline Road, Carrollton, Texas 75006.

Net Meets IEEE, Ecma Standards

(Continued from Page 77)

and stable under all network loads, a spokesman said.

The system can operate on either baseband or CATV-compatible broadband cable systems, but is initially oriented to CATV systems in order to achieve the extended distances required for larger facilities.

Four levels of priority are available to be assigned to each data port. The highest priority frames are transmitted whenever a node holding them gets the token.

The Token/Net Interface Module (TIM) is the interface to the local network. It is available in two different base unit configurations. The TIM-200 is comprised of three printed-circuit assemblies: the radio frequency modem, access unit and control unit. It costs $3,500.

The TIM-220 is similar to the TIM-200 except that it provides two additional card positions in the basic unit and a larger power supply. It is primarily intended for an office or engineering area where there is a cluster of terminals and/or other data equipment. It costs $4,000.

The Network Management Processor (NMP) provides certain high-level network functions including network software reload and privacy key management. These functions may be "semidistributed" in that more than one NMP can be installed in a network at the same time. It costs $6,500 from Concord Data Systems at 303 Bear Hill Road, Waltham, Mass. 02154.

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Kimtron Unveils Update Of ABM 85 Display Unit

SANTA CLARA, Calif. — Kimtron Corp. has announced the ABM 85H CRT display terminal, a new version of the current ABM 85.

The H model features a detached tactile touch keyboard, high-resolution P31 display, monitor mode and 128 displayable character codes. Two RS-232C ports are used for asynchronous communications; both are bidirectional and have a data transfer of up to 19.2K bit/sec, a vendor spokesman said.

Additional features of the ABM 85H include user-programmable answer back, function key and attribute storage in nonvolatile memory, hidden attributes and graphics and mathematics symbol character sets, the spokesman said.

Options include up to 8 pages of data storage and a 1,200 bit/sec modem. The control, escape and keyboard codes can be customized for OEM contracts, according to a vendor spokesman.

The cost of the ABM 85H is $865 or $795 prepaid. More information is available from the vendor at 2225-I Martin Ave., Santa Clara, Calif. 95050.

Honeywell Tool Targets Multics

PHOENIX — Honeywell, Inc. has introduced communications software said to allow its DPS 6-based processor to serve as a satellite for its Multics large-scale computer systems.

Satellite 6M provides capabilities for remote batch, file transfer and remote terminal concentration to the Multics host, according to a vendor spokesman.

It permits remote batch to operate in a multithreaded mode with multiple card readers and printers.

File transfer between the satellite and host Multics systems can be accomplished in both directions, the spokesman said.

The package also allows up to 32 terminals to be concentrated onto a single communications circuit. Any Honeywell Multics-supported terminal may be used as an interface with Satellite 6M, the vendor spokesman claimed.

The package will be available in the fourth quarter of 1983 for an annual license fee of $995. More information is available from Honeywell Information Systems, P.O. Box 8000/T-60, Phoenix, Ariz. 85066.

Digilog DLM V Isolates Faults

MONTGOMERYVILLE, Pa. — A data communications monitor/analyzer said to have full keyboard programmability has been announced by Digilog Inc.'s Network Control Division.

The Digilog DLM V reportedly isolates faults in any data communications center or field service situation.

The device features a menu-driven programming language consisting of 15 instructions and 11 commands. Each test program can be up to 72 steps in length, according to a vendor spokesman.

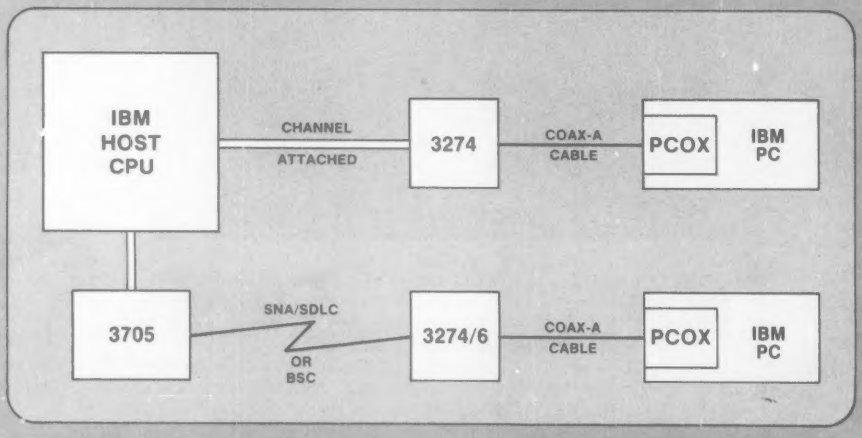
The DLM V also features an erasable read-only memory where up to 10 named programs can be stored simultaneously and an optional Digilog MSU IV dual-diskette subsystem, the spokesman said.

The lower-priced DLM III and DLM IV can both be upgraded to a full-keyboard DLM V, the spokesman said.

The DLM V costs $5395 from the vendor at 1370 Welsh Road, Montgomery, Pa. 18936.

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Canoga Data Systems Out With Fiber-Optic Mux

CANOGA PARK, Calif. — Canoga Data Systems has introduced the CMX-4T1 fiber-optic multiplexer, said to be versatile enough to multiplex four T1 channels onto a single fiber, transparent to the incoming T-1 signal.

The CMX-4T1 reportedly is compatible with T-1 speed variations and can be used in the DP environment as well as in telephone company applications.

With its own integral power supply, the multiplexer can be powered from standard ac line voltages. It uses fiber-optic transmission cable for interference-free transmission, the vendor said.

Typical applications for the multiplexer include computer-aided design and manufacturing systems and data links such as multiplexer outputs where several low-speed channels are multiplexed into one 1.544M-bit data stream.

The CMX-4T1 is priced at $66.50 from Canoga Data Systems, 21218 Vanowen, Canoga Park, Calif. 91303.

Dial-Up Encryption Device Bows

MIAMI — Racal-Milgo, Inc. has unveiled an encryption device designed to safeguard data on circuit-switched, dial-up networks.

The Dial-Up Datacryptor II operates in half- or full-duplex modes, synchronously or asynchronously, and at data rates up to 9,600 bit/sec. The device reportedly can create and downline load new session keys for each modem connection and, when the modems disconnect at session's end, will erase the key at both ends of the link.

Three models are available — a central unit, Model 3400, and two remotes, Models 3500 and 3600. Only the Model 3400 can generate master keys. Prices start at $2,300 from 8600 N.W. 41st St., P.O. Box 520399, Miami, Fla. 33152.

Carterfone Unveils VDT

DALLAS — Carterfone Communications Corp. announced the VDT 920-1, a standard Televideo, Inc. 920 display terminal with an integral Bell 212A-compatible modem.

Standard features include a printed circuit board, keyboard-initiated autodial using a pulse-dial technique, a microprocessor-based design and software implementation offering self-test idle mode.

The VDT 920-1 has a list purchase price of $1,615. Maintenance and one- to three-year licenses are available from Carterfone Communications, located at Suite 1400, 1111 W. Mockingbird Lane, Dallas, Texas 75247.

Digi-Data Corp. Announces Tape Drive

JESSUP, Md. — A cartridge tape drive from Digi-Data Corp. is said to have an integral intelligent controller that emulates RS-232C asynchronous protocol and is also compatible with computer systems operating with RS-232C-type communications devices and peripherals.

The Model 70R includes a 2K-byte buffer expandable to 8K bytes and reportedly supports up to four disk drives. Standard firmware reportedly allows off-line tape-to-tape copy without host interaction in dual-drive configuration.

The unit will store up to 17.3M bytes of unformatted data at data rates from 75- to 19.2K bit/sec. Prices range from $2,290 to $2,380 from 8580 Dorsey Run Road, Jessup, Md. 20794.

Modem Out By NCR Comten SNA-Compatible

ST. PAUL, Minn. — NCR Comten, Inc. has introduced a synchronous diagnostic modem said to be compatible with IBM's Systems Network Architecture (SNA).

The 7164 modem transmits at 4,800 bit/sec and offers network diagnostics that can be automatically initiated by a host or controlled by the operator, according to a vendor spokesman. It is a microprocessor-based modem that transmits in full-duplex mode over four-wire circuits and operates over voice-grade leased lines.

The modem will be available in June for $3,700 from NCR Comten, Inc., 2700 Snelling Ave. N., St. Paul, Minn. 55113.

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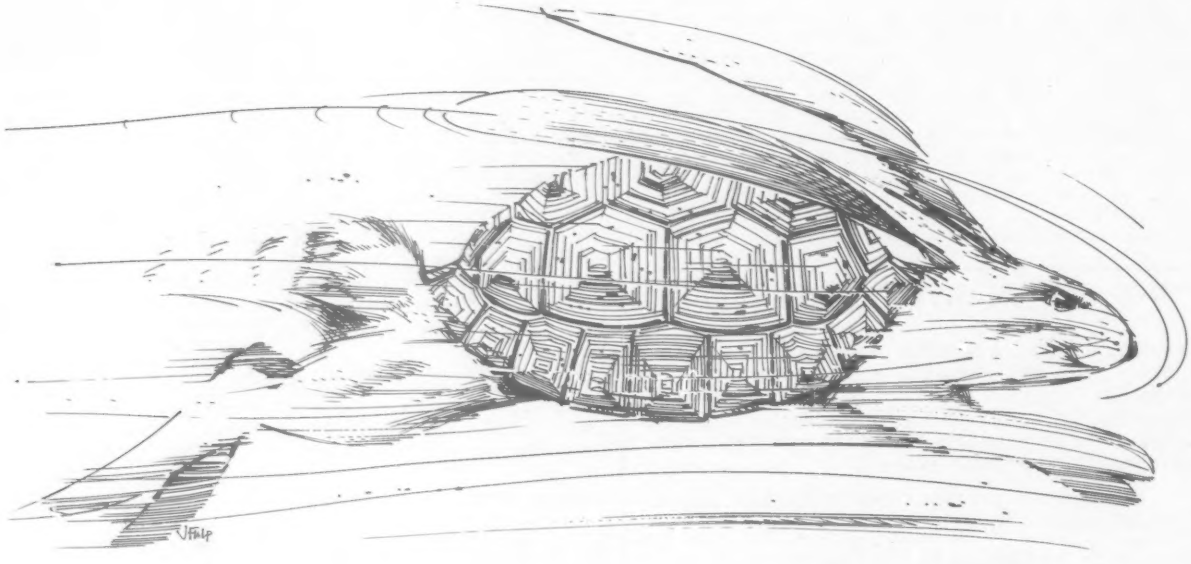
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14

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Supermini Produces Fast Results for Firm

LONG BEACH, Calif. — How does one of the nation's largest geotechnical and environmental consulting firms bring together its nearly 30 disciplines and its own financial management system to provide cost-cutting and time-saving results?

Earth Technology Corp. (Ertec) found the solution in a Harris Corp. 800 superminicomputer. The system has reportedly enabled the company to perform the data processing mandated by projects requiring expertise in the geosciences, airborne imagery, geotechnical engineering, the environmental sciences and mining engineering. Approximately 70% of all computer usage at the company involves scientific applications, while 30% is devoted to financial management.

"We need a versatile computer that has a large capacity," said Hudson Matlock, Ertec's vice-president of research and development.

"The end product of our efforts is information. Information en masse. Information of all kinds. It can be descriptive or numerical, and that's where the computer comes in."

Matlock said Ertec places heavy demands on its computer — data acquisition, processing, storage, retrieval, graphics and analysis. The company must be able to process data quickly and present information in a manner consistent with its clients' specific needs, he explained.

"For example, earthquake engineering is an important component of our engineering activities. We have to know about seismicity, how the forces are generated, how the forces are transmitted and how a structure will react to such forces.

"Sophisticated and massive analyses are involved from a mechanistic standpoint. The development of many analyses or structural models may be required to determine the deformation of soil layers. So computer modeling of physical systems under static loading, wave loading, wind and dynamic loading, blast and impact is definitely important," Matlock said.





Earth Technology's Harris 800 superminis go on the road (right) for on-site geotechnical analyses, as well as at headquarters for more traditional business applications (above).

Prior to deciding to buy its own computer, Ertec was using time-sharing services. Two years ago, it was spending $20,000 each month on computer processing, according to Zafar Sutarwala, manager of computer services. Today, he said, that figure would be closer to $200,000 per

(Continued on Page 92)

IBM Unveils 3430 Tape Drive To Rival Its Model 3410 Line

RYE BROOK, N.Y. — IBM has unveiled a magnetic tape drive that reportedly packs about 3.5 times the data rate and storage density of its current line of Model 3410 drives.

The IBM 3430 magnetic tape subsystem, which incorporates many of the performance characteristics of the IBM 3420, can operate with IBM System/38 Models 4, 5 and 7, as well as with virtual storage IBM 370 Models 135 through 168 and the 4300 and 30 series of processors, according to the vendor.

Data rate, storage and reliability improvements achieved with the 3430 are the result of group coded recording, a method of magnetic tape recording used on high-performance models of the 3420 series, IBM said. The 3430 can reportedly read and record data at up to 6,250 byte/in. at speeds up to 312,000 byte/sec, compared to the 3410's maximum speed of 80,000 byte/sec.

Improved reliability is achieved through the use of large-scale integration design features, fewer, denser, more reliable circuits and a new diagnostic package, the vendor explained.

The microdiagnostic package is said to have better error detection because of an automatic error-checking feature that polls all internal circuits. In addition, enhanced error logging provides comprehensive information to service personnel to help isolate and resolve problems faster.



IBM 3430 Magnetic Tape Subsystem

The 3430 tape drives are connected independently to their respective control unit, and any drive in the subsystem can reportedly be taken out of operation without interrupting the function of the other units.

Available in two models, the 3430 Model A1 consists of a tape control and one tape unit housed in a single enclosure. The Model B1 is a single tape unit. Purchase prices are $33,400 and $16,900, respectively. General availability is slated for the third quarter of 1983.

Further details are available from IBM at 900 King St., Rye Brook, N.Y. 10573.

Turnkey System Features 'Microbol'

SUNNYVALE, Calif. — Advanced Electronics Design, Inc. has unwrapped a 16-bit, multiuser turnkey system for small business applications that features Microbol, an integrated software package containing the operating system, programming language, disk file processor and applications program.

Using Digital Equipment Corp.'s LSI-11/23 processor, the Freeport is capable of supporting up to seven users simultaneously. The system's basic configuration consists of a 5¼-in., 10M-byte hard disk and 500K-byte floppy disk, 256K bytes of random-access memory, the Freeport terminal and keyboard. The price for this configuration is $14,995.

Additional terminals with keyboards can be added to the system at a cost of $1,495 each.

The applications software portion of the Microbol package includes an integrated accounting package made up of payroll processing, spreadsheet, budget calculator, point-of-sale, word processing, mailing list and electronic mail capabilities. General packages are separated into modules containing all elements of each accounting function, allowing each module to operate alone, a spokesman said.

Freeport is available through Computerland retail stores, according to the vendor at 440 Potrero Ave., Sunnyvale, Calif. 94086.

CDC 16-Bit Micro Boasts Multiterminal Capability

GREENWICH, Conn. — Control Data Corp. has announced a 16-bit microcomputer that offers multiterminal capability.

The CDC114 Series A system is available with large-capacity disk for on-line information storage and retrieval and flexible disk backup. A basic system, comprised of one CRT, a 20M-byte hard disk, one floppy disk backup, 512K bytes of random-access memory, the Microsoft, Inc. Xenix operating system and one financial management application, sells for under $15,000.

Further details may be obtained from CDC at 500 W. Putnam Ave., Greenwich, Conn. 06836.

T100 Micro Unveiled

TUSTIN, Calif. — Toshiba America, Inc. has unveiled a microcomputer intended for business and home applications built around its T-Basic language and running under the Digital Research, Inc. CP/M operating system.

Aimed at small business operators, the T100 features three standard memory units, up to 560K bytes of external floppy disk memory, several I/O video screen offerings and high-resolution color graphics, the vendor said. For main memory, the T100 features 64K-byte random-access memory (RAM); it also uses a 32K-byte read-only memory for the T-Basic language and 16K-byte RAM for video.

An entry-level configuration including keyboard and CPU costs $795. A version with a green display and two floppy disk drives featuring a total of 560K bytes of memory sells for $2,385 from 2441 Michelle Drive, Tustin, Calif. 92680.

Sixteen-Bit Micro Debuts

IRVINE, Calif. — Micro Five Corp. has announced the Model 1540 16-bit microcomputer.

The unit features up to 19M bytes of hard disk storage, 128K bytes of main memory, a 1M-byte floppy disk drive, a 5¼-in. form factor and two RS-232 ports, the vendor said.

The unit costs $8,995 from 17791 Sky Park Circle, Irvine, Calif. 92714.

Disk Drives Target IBM Micro

CANOGA PARK, Calif. — Interface, Inc. has announced a series of 5¼-in. Winchester disk drives and subsystems for the IBM Personal Computer.

The drives are available with 5.3M, 10.6M and 15.9M bytes of formatted storage, a vendor spokesman said. Each disk drive subsystem includes the 5¼-in. Winchester drive, cabinet, power supply, cable, connector and I/O adapter, according to a vendor spokesman.

The drives have a track density of 345 track/in., and track-to-track access time is 2 msec with an average access time of 85 msec, the vendor said.

Additional features include a 512-byte full-sector buffer and a 32-bit error correction control, according to the vendor.

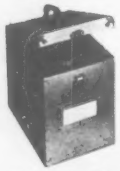
Prices for the disk subsystem range from $1,695 to $2,295 depending on memory capacity. More information is available from Interface, Inc. at 7630 Alabama Ave., Canoga Park, Calif. 91304.



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Fixed/Removable Disks Unveiled

GOLETA, Calif. — DMA Systems Corp. has extended its line of 5¼-in. Winchester disks by unwrapping two fixed/removable disks.

Dubbed the Micro-Magnum 26F and 39F, the disks hold up to 26M and 39M bytes of unformatted storage, respectively. Users can integrate more than one 26F or 39F into a system, a spokesman said. For instance, a 39F can be coupled with one of the company's 5/15 disks, equipping a system with an unformatted storage capacity of 58.5M bytes, he explained.

The company attributes the disks' capacity flexibility to the use of servo technology embedded into both the fixed and removable portions of all its disk drives.

Evaluation units of 26F will be available during the second quarter of this year with 39F samples available in the third quarter.

The 26F costs $990 while the 39F lists for $1,250, the vendor said from 601 Pine Ave., Goleta, Calif. 93117.

Micro Offers 5¼-In. Drives

SANTA BARBARA, Calif. — Polymorphic Systems, Inc. has introduced an 8-bit microcomputer that reportedly offers 1M byte of floppy disk storage on two 5¼-in. "half-height" drives.

With the "half-height" floppy disk drives, the machine's chassis is kept to a mimimum — 5½-in. high, 15 in. wide, 17 in. deep.

The System 8810/2 costs $4,439. Further details may be obtained from Polymorphic Systems at 460 Ward Drive, Santa Barbara, Calif. 93111.

IBM CPUs Get Service Plan

FRAZER, Pa. — The Sorbus Service Division of Management Assistance, Inc. (MAI) has introduced a preventive and remedial maintenance service plan for the IBM Models 3031 and 3033, the 4300 series and plug-compatibles.

The 24-hour, 7-day/week service is available to mixed-vendor computer shops for approximately 20% less than what IBM charges, Sorbus said. For the 30 series, Sorbus will dispatch site field engineers, when required, on a full-time basis. Also, Sorbus offers remote diagnostic capabilities for the IBM 4300 series.

Pricing is contingent upon job requirements, Sorbus said. The company has 160 locations across the country. Further details on the service plan for the IBM equipment can be obtained from its headquarters at 50 E. Swedeford Road, Frazer, Pa. 19355.

Display Card Targets IBM Micro

BRISBANE, Calif. — United Suppliers, Inc. has announced a video display card for the IBM Personal Computer.

The display card features both the IBM monochrome display card with printer adapter and the IBM color graphics display card. The combined units fit into one expansion slot on the micro's backplane, the vendor said.

An additional feature is 32K bytes of on-board memory. This, the vendor said, gives users two pages of high-resolution graphics that can be used to facilitate animation or other high-demand graphics.

The display card costs $499 and is available from 3785 Bayshore Blvd., Brisbane, Calif. 94005.

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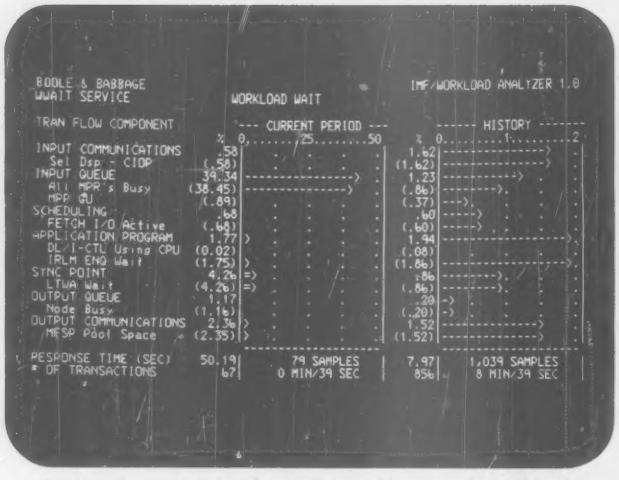
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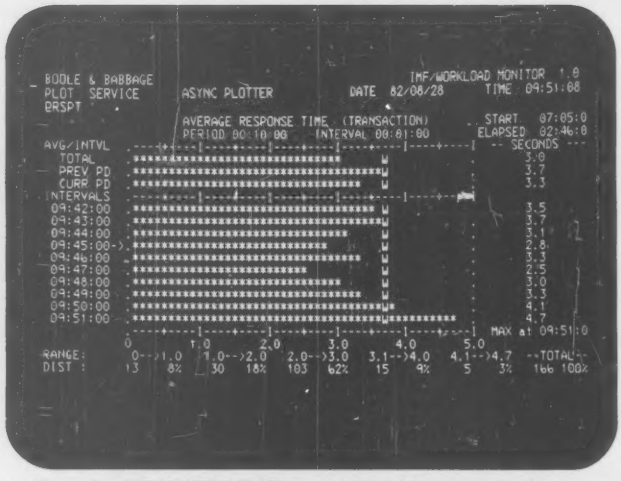
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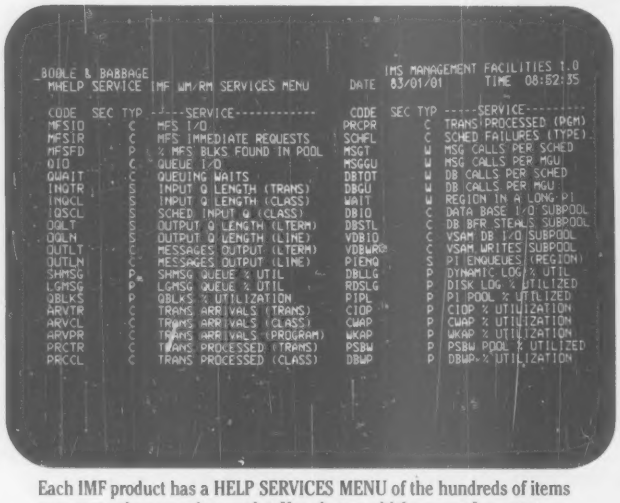
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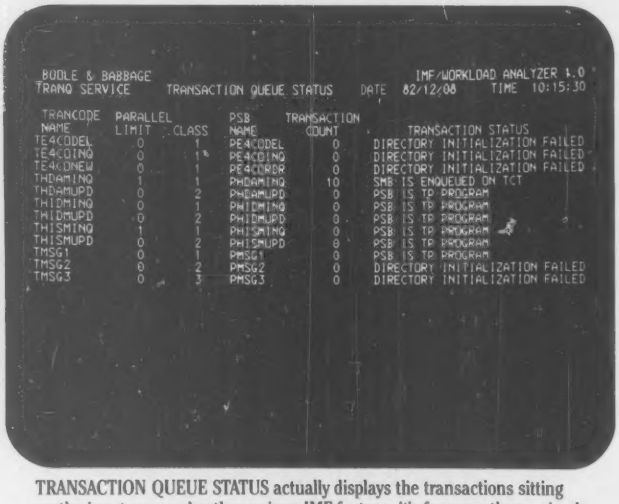
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TRANSACTION QUEUE STATUS actually displays the transactions sitting on the input queue. Another unique IMF feature, it's far more than a simple display of queue status—it shows you exactly what user work is sitting in the queue waiting to be processed.

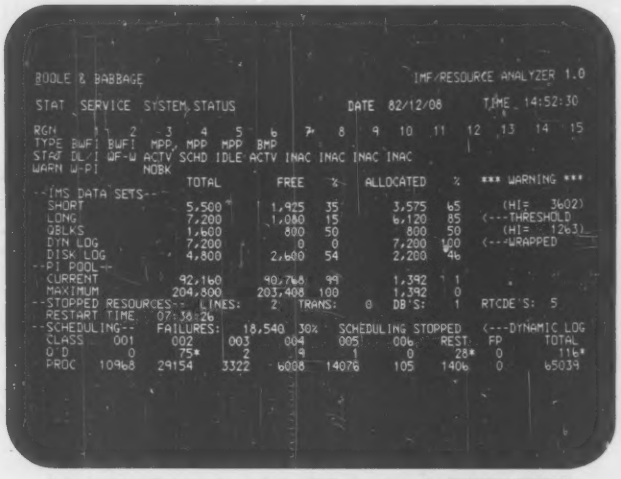
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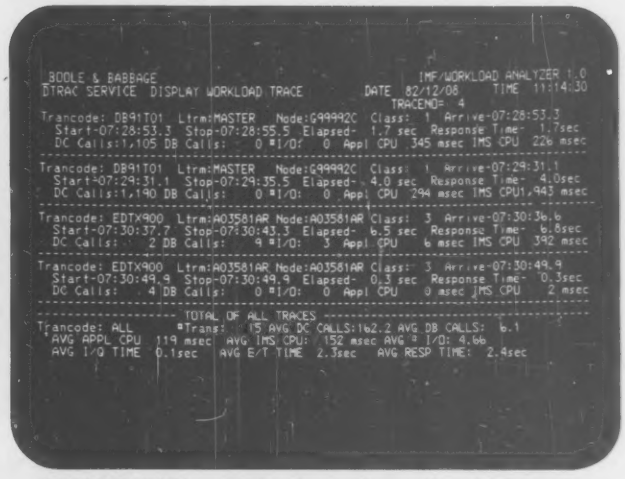
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Look into our windows today. Write Boole & Babbage, 510 Oakmead Parkway, Sunnyvale, CA 94086. Or call 800-538-1893 (in Calif. 408-735-9550). In Europe contact the European Software Company, GmbH: Adersstrasse 30, 4000 Düsseldorf 1, West Germany. PH: 0211-370794.

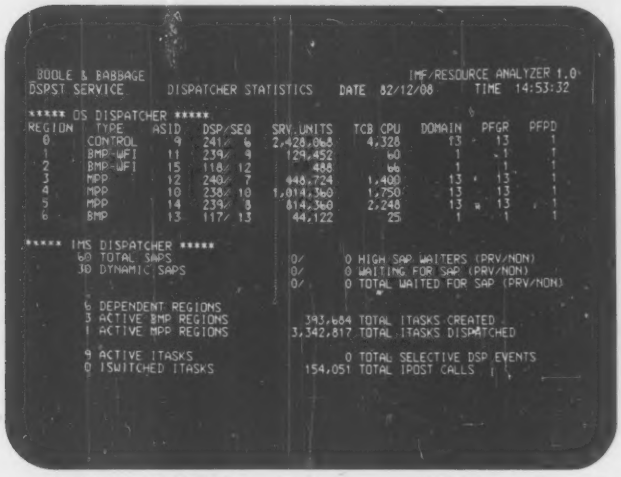
VINDOWS.



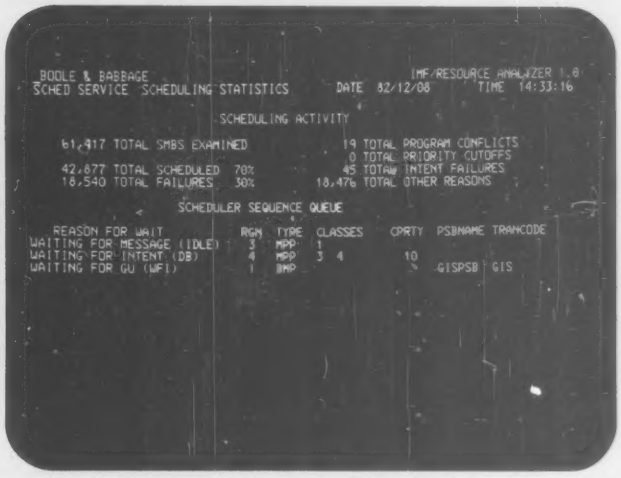
A time-saving first step in analyzing IMS operation, the SYSTEM STATUS display tells you at a glance whether or not things are okay. Should further analysis be required, you can select specific areas to investigate with the IMF analyzers.



WORKLOAD TRACE, an entirely unique service, provides a detailed, on-line trace of the life of any transaction—or group of them—inside IMS. Unlike IBM'S DC Monitor, it shows you only what you want to see—immediately, and without the high overhead.



DISPATCHER STATISTICS gives a quick summary of activity across all active IMS processing regions, showing whether MVS is providing the service you expect the SRM to deliver. This lets you see if IMS is getting the resources needed to process the work.



SCHEDULING STATISTICS shows unsuccessful as well as successful schedule attempts. It also indicates the reasons why attempts have failed, allowing you to take appropriate corrective action quickly, without the traditional trial-and-error guesswork.

Boole & Babbage

NEW VISIONS IN SYSTEMS MANAGEMENT.

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Turnkey Mini System Out For Sales Representatives

ELK GROVE, Ill. — Management Info, Inc. has announced the Sales Management and Control System, a turnkey minicomputer system for sales representatives.

The system features tracking of actual sales to forecasted sales, tracking of all quotes and samples to assure follow-up and tracking of commissions due by principal, forecasting and performance reports, the vendor said.

The system is based on a Computer Automation, Inc. 16-bit processor with 128K bytes of random-access memory and between 10M and 40M bytes of Winchester disk storage. Also included is a CRT display terminal and a dot-matrix printer. Systems cost between $17,000 and $24,000, depending on the configuration, the vendor said from 180 Crossen, Elk Grove Village, Ill. 60007.

Contractors Get Micro

ATLANTA — The Contractor Microcomputer Services Division of Bradbury & Co. has announced a portable microcomputer for the construction industry.

Based on a Nonlinear Systems, Inc. Kaypro II microcomputer, the unit, called "The Contractor's Dream Machine," was designed for use in field offices.

Features include 13 standard software programs, including a payment application, a Digital Research, Inc. CP/M scheduling package, an estimating package and a shop drawing/submittal control package, the vendor said.

The processor comes with a keyboard, CRT terminal, processor with integrated disk drive and a carrying case. The unit costs $4,995, the vendor said from 3609 Shallowfield Road, Atlanta, Ga. 30340.

Apple Micros Get Voice Module

KALAMAZOO, Mich. — MCE, Inc. has announced a voice input module for Apple Computer, Inc. Apple microcomputers.

The MCE Voice Input Module (VIM) is intended for use by educators, executives, word processors, programmers, the handicapped or any user desiring voice recognition capability, the vendor said. It will reportedly operate on any Apple II or Apple IIe software by voice without software modification. It is said to recognize anyone's voice, has an unlimited vocabulary and features utility software to accomodate building, editing and training vocabulary.

VIM costs $825, the vendor said from 157 S. Kalamazoo Mall, Kalamazoo, Mich. 49007.

Model RBS-DC Supplies Backup

OKLAHOMA CITY, Okla. — High Technology Software Products, Inc. has announced a reserve power supply for the Franklin Computer Corp. Ace computer.

The Model RBS-DC is said to supply instantaneous backup power during power outages and brownouts. One hour and 45 minutes of backup is provided to allow uninterrupted computer operation for short failures or for an orderly shutdown during an extended outage.

The system costs $325 from the firm, through P.O. Box 60406, 1611 N.W. 23rd St., Oklahoma City, Okla. 73146.

Firm Saves Time With Supermini

(Continued from Page 87)

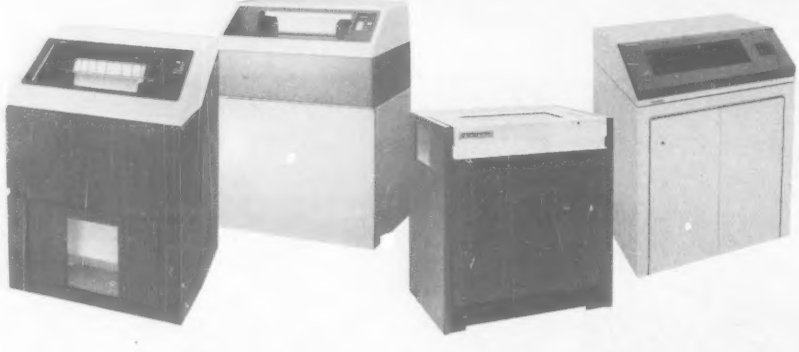
month.

"We selected four superminicomputers for benchmark testing: Prime [Computer, Inc.], Digital Equipment Corp., Perkin-Elmer [Corp.] and Harris [Corp.]," Sutarwala reported. "The Harris was about 50% faster than DEC's VAX-11/780 and 50% to 60% faster than the Perkin-Elmer 3240. With our company's growth rate, that speed [difference] couldn't be ignored."

Harris' operating system provided the versatility that Ertec sought, according to Sutarwala: "We can let the users do what they want, yet restrict them in certain storage spaces without having to tweak the machine constantly."

Subsequently, the company is shifting more and more projects onto the system.

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Workstation Fits Burroughs

SALT LAKE CITY, Utah — Microwest Terminal Systems, Inc. has announced the MTS 183, a workstation that is compatible with Burroughs Corp. systems architecture.

Designed to operate under Digital Research, Inc.'s CP/M operating system, the MTS 183 consists of one field-tested, Burroughs-compatible terminal; a Zilog, Inc. Z80-based microcomputer with dual minidiskette drives; and a variety of application programs and utility programs with documentation, the vendor said.

The MTS 183 costs $3,995, the vendor said from 1473 S. 1100 East, Salt Lake City, Utah, 84105.

Keyboard Runs With Apple II, TRS-80, Ace

FORKED RIVER, N.J. — Creative Computer Peripherals, Inc. has announced an auxiliary keyboard called Keywiz Very Intelligent Peripheral (VIP) that consists of 31 user-programmable function keys in one case.

Each of the 31 keys can be programmed with up to eight characters and programmed again while depressing the shift key, providing the user with 62 user-defined keys. Four such keyboards are stored in the device's memory, making 248 preprogrammed keys available to the user at the touch of a button, the vendor explained.

Keywiz VIP runs with Apple Computer, Inc.'s Apple II and IIe microcomputers, Radio Shack's TRS-80 Model IIIs, and Franklin Computer Corp.'s Ace micros. It costs $299, the vendor said from Aztec Environmental Center, 1044 Lacey Road, Forked River, N.J. 08731.

Power Backup Serves Micros

SAN DIEGO — Tauber Electronics, Inc. has announced Datasaver, a power backup unit for microcomputers and other electronic devices.

The unit is designed to ensure data integrity during power failures or blackouts. It automatically switches to backup power within 1/100 of a second. In addition, an alarm sounds and a panel light alerts users to a power problem, the vendor said.

The unit is available in a 90W unit which costs $375 and a 200W unit priced at $675. The vendor is located at Suite 314, 4901 Morena Blvd., San Diego, Calif. 92117.



'Oh, the Serpent Left That Here. I Believe He Called It an Apple.'

Microdisk Enhances IBM XT With Larger Hard Disk Options

GARDNERVILLE, Nev. — Microdisk, Inc. has announced an enhancement to the IBM Personal Computer XT system that replaces the machine's 10M-byte Winchester disk drive with a hard disk of 20M, 27M or 54M bytes of memory, a vendor spokesman said.

The Microdisk upgrade comes with a menu-driven operating system; also available is an option, called 1DOS Operating System.

Prices range from $1,300 to $3,000, Microdisk said from 1422 Industrial Way, P.O. Box 1377, Gardnerville, Nev. 89410.

Series FC2500 Keyboard Offers Multistation Keys

ELMHURST, Ill. — Illinois Tool Works Cortron, Inc. has unveiled a low-profile keyboard with full-surface, multistation key tops.

The Series FC2500 keyboard — injection-molded Noryl with a nonglare matte finish — features a solid-state ferrite core and linear or tactile "Feel" key switches.

Other features include an electronic shift lock, flexible key assignment, multiple mode selection, positive or negative logic, autorepeat and serial and/or parallel output.

The keyboard is priced at $107 for orders of 100 or more, $85 for 1,000 or more and $60 to $70 for 10,000 or more. More information is available from the vendor at 400 W. Grand Ave., Elmhurst, Ill. 60126.



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Bits & Pieces

DLM V Line Monitor Offers Menu-Driven Programming

MONTGOMERYVILLE, Pa. — The Network Control Division of Digilog, Inc. has announced the DLM V line monitor.

The unit features menu-driven programming with an edit and update capability that permits modifications of finished programs without rewriting. Other features include menu-guided setup, multiple stored setups, menu-guided programming, nonvolatile menu buffers, nonvolatile program buffer, program editing, full keyboard and a detachable keyboard, the vendor said.

The DLM V costs $5,395 and is available from 1370 Welsh Road, Montgomeryville, Pa. 18936.

Interface Product Family Fits Most Micro Controllers

EVERETT, Wash. — Micro-Mation, Inc. has released a family of computer interface products for most microcomputer controllers.

The SBC6803 Serial Coupler series is a microprocessor controller board designed to be used as a remote data acquisition and control unit, according to the vendor. It includes one serial port for communications with a host controller and two parallel I/O ports. The serial port can reportedly be set for rates of 150 to 9,600 bit/sec., and a plug-on interface adapter is used to interface to RS-232, RS-422 or fiber-optic communications links.

The coupler is available for $140, and adapters range from $40 to $65 from at 2615 W. Casino Road, Bldg. 3-D, Everett, Wash. 98204.

DG Cuts Prices 2% to 39% On Magnetic Storage Line

MILFORD, Mass. — Data General Corp. has announced price cuts between 2% and 39% on its line of magnetic storage media, including disk packs, cartridges, diskettes and tapes.

At the same time, prices on most DG ribbons for hard-copy peripherals have changed, with some increasing 6% to 20%, and others decreasing 5% to 21%.

In addition to the price changes, DG announced a one-time incentive offer of a 10% discount on any single computer supply item ordered from the company's catalog before May 15.

Price changes are effective immediately, the vendor said from 50 Maple St., Milford, Mass. 01757.

HP Enhances 7580A, 7585A, Adds Eavesdrop Capability

PALO ALTO, Calif. — The large-format Hewlett-Packard Co. HP 7580A and 7585A eight-pen drafting plotters have reportedly been enhanced to handle different sizes of paper.

In addition, the vendor has added two RS-232C/CCITT V.24 interface connectors to these products, providing them with "eavesdrop" capability.

At prices of $16,100 and $22,900, the HP 7580B and HP 7585B will replace the A versions, with shipments scheduled to begin next month. Futher details may be obtained from HP at 3000 Hanover St., Palo Alto, Calif. 94304.

CGIS' Tegastation Targets Printed Circuit Designers

AUSTIN, Texas — CGIS Co. has announced the Tegastation, an intelligent workstation for integrated circuit and printed circuit designers.

The unit features design capture, simulation and analysis software, interactive design and simulation. The stand-alone workstation is based on the 32-bit architecture of Apollo Computer, Inc.'s Domain local-area network, the vendor said.

Software for the workstation includes CGIS' Tegas simulation software, including a logic capture, simulation and waveform display modules, the firm said.

The base price for a turnkey version of the intelligent workstation is $60,000. The vendor also offers a software-only package for $39,000. The vendor is located at 7701 N. Lamar, Austin, Texas 78752.

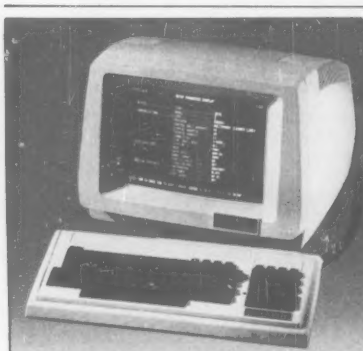
Applied Micro Announces IEEE 488 Link for STD Bus

TUCSON, Ariz. — Applied Micro Technology Inc. has announced an IEEE 488 interface for its line of STD Bus microsystems.

Designated ST4311, the interface is reportedly compatible with most processor standards for the bus. The board provides the user with the option of communicating with the General Purpose Interface Bus (GPIB) under either programmed I/O, interrupts or direct memory access control, according to a vendor spokesman. Visual indication of the state of the GPIB control and status lines is provided by an on-board LED array.

The price of the ST4311 is $350. Included with each ST4311 is a Digital Research Corp. CP/M compatible 5-in. or 8-in. diskette, technical manual and interface cable.

More information is available from Applied Micro, through Box 3042, Tucson, Ariz. 85702.



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Wedlock of Micros and E-Mail Predicted

By Marguerite Zientara
CW Staff

NORWALK, Conn. — The coming decade will likely bring the marriage of personal computers with communications technology, producing the healthy offspring of electronic mail.

Electronic mail systems have grown slowly in today's tough economic climate because of the high cost of terminals, according to a report from International Resource Development, Inc. (IRD).

"This is particularly true of computer-based message systems which [are] more advanced than telex for sending messages, but [have] had to face the problem of a lack of user base," according to the 234-page "Electronic Mail and Personal Computers."

However, personal computers generally procured for noncommunications reasons — word processing, games or education — "are likely to provide an unanticipated, but ideal, solution to the problem," the report projected.

Communications capabilities can be added to a personal computer today for as low as $150 on many systems, including hardware and software, and that price is expected to drop, the report pointed out. By 1992, there are expected to be 117 million installed personal computers, 60 million of which are expected to have communications capabilities.

'Personal computer-generated electronic mail is expected to jump from $48 million to $12.1 billion, increasing its share from 3% to 80%.'

Also by that time, microcomputers are projected to have penetrated 70 million homes or approximately 70% of U.S. households.

All told, this will comprise "an enormous base of potential terminals, freeing communications service companies to develop sophisticated services for this base," the report noted. "With the problem of communications terminals solved, personal computer-driven electronic mail is likely to flourish."

Personal computers now send $48 million worth of electronic mail, which is only 3% of the total $1.45 billion market. The overall electronic mail market is projected to grow from $1.45 billion in 1983 to $15.1 billion in 1992.

Personal computer-generated electronic mail is expected to jump from $48 million to $12.1 billion, according to the report, increasing its share from 3% to 80%. "The personal computer electronic mail market will no longer be an afterthought and will become the major means of sending electronic mail," the report forecast.

Where will the networks come from to handle all this personal computer-generated electronic mail? As IRD's report pointed out, today's electronic mail supplier structure comprises a small number of large companies — Western Union, Inc.; RCA Global Communications, Inc.; ITT World Communications; and Western Union International — and a number of interconnection and home time-sharing firms, such as The Source and Compuserve.

Since these companies do not have the resources to implement networks large enough to handle the potential personal computer-generated electronic mail traf-

(Continued on Page 98)

Produces Letter-Quality Text

Model 630W Printer Fits Wang

BEDFORD, Mass. — Continental Resources, Inc. has introduced a letter-quality printer for use with equipment from Wang Laboratories, Inc.

The Model 630W uses the Xerox Corp. Diablo's print mechanism and enclosure to replace Wang's 6581W printer. Features include 40 char./sec bidirectional print speeds with a plastic print wheel and 32 char./sec print speeds with a metalized wheel. Cut-sheet feeders and continous-form tractor feeds are available as options.

The printer is available for $4,800 from Continental Resources, Inc., 175 Middlesex Tnpk., Bedford, Mass. 01730.

CT-Mail Package Processes Messages At ISW, ASW Lines

SANTA CLARA, Calif. — Convergent Technologies, Inc. has introduced an electronic mail package said to process messages locally at the vendor's IWS and ASW families of workstations.

CT-Mail takes advantage of a cluster architecture allowing a user to set up messages during regular business hours and have them transmitted at a later time, according to a vendor spokesman. It will allow messages and up to eight attachments per message to be sent between the 16 workstations.

Available in the spring, CT-Mail costs $3,500.

Additional information is available from Convergent Technologies, 2500 Augustine Drive, Santa Clara, Calif. 95051.

Document Retrieval Out for System/34

WINTER PARK, Fla. — Westmoreland Systems, Inc. has announced the Document Retrieval System for the IBM System/34.

The system is keyword-based, a spokesman said. When a document is filed on the system, it is given a number representating the physical location of the document and up to five keywords.

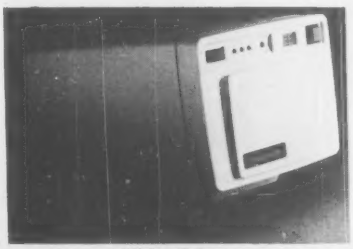
The Document Retrieval System costs $300 from Westmoreland Systems at Suite I, 228 Park Ave. N., Winter Park, Fla. 32789.

Slide Maker Fits IBM Micro

DALLAS — Computer-Mate, Inc. has introduced a slide maker for the IBM Personal Computer said to produce presentation-quality 35mm slides or photographic prints directly from the computer's display.

The Video Printer features automatic film advance and rewind and a port for previewing the screen image to be captured. Controls allow the user to adjust chroma, brightness, contrast and raster without loss of resolution.

The unit is available for $2,495 from selected retail outlets or from Computer-Mate, Inc., 1006 Hampshire Lane, Richardson, Texas 75080.



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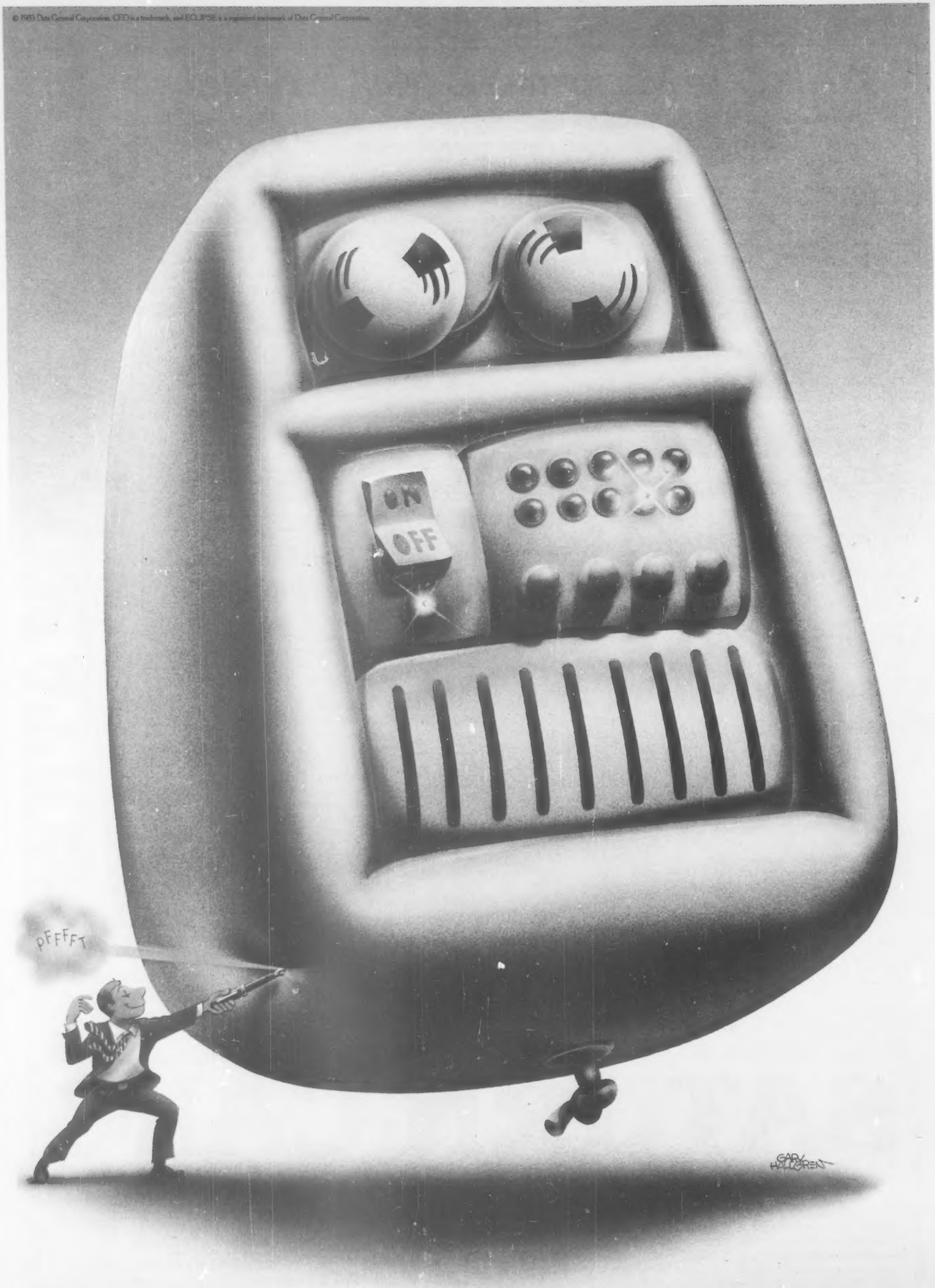
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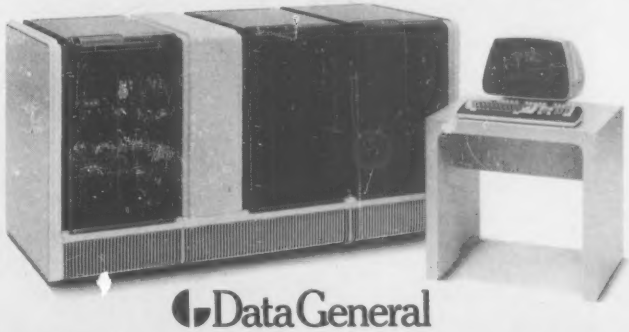
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Data General

'Compuphobia' Seen Hitting Older Work Force

NORWALK, Conn. — The expected proliferation of personal computers in the work place will not be a bed of roses for everybody. A quarter of the work force will have psychological problems stemming from fear of computers, according to an International Resource Development, Inc. (IRD) researcher.

"Compuphobia" will have its most severe effect on older members of the work force, according to David Ledecky. "Workers who have done their jobs without computers for 10 or 15 years and who haven't had exposure to them in universities or educational settings will obviously have the toughest time adjusting," Ledecky said.

"Businesses take cost factors into account in the implementation of computers, but often overlook the fact that certain employees simply don't adjust well to working and communicating with computers," he observed.

"A great deal of this compuphobia can be related to math anxiety and to difficulties that individuals encounter in learning foreign languages," he noted. "There are elements of both in the use of computers."

There are three distinct forms of the affliction, according to Ledecky. The first is the general fear of working with computers.

A second, closely related form of compuphobia is the fear of failure in computer usage. This fear is similar to the fear of performance failure on any job-related task, except that in working with computers, people feel they have less control over their work and fewer means of checking and validating their performance.

The third form of compuphobia relates to the fear of being replaced by a machine, Ledecky said. Individuals feel they are working with an instrument that might actually undermine their own value in the work place.

Ledecky stressed that while manifestations of compuphobia are not expected to drive many individuals to seek professional help, "hesitancy over working with computers will handicap a certain percentage of employees."

Time, however, heals all wounds, and these difficulties "should dissipate with time and with greater exposure to the computers," he concluded. Furthermore, the growing use of microcomputers to transmit electronic mail both at home and at work may help increase user comfort levels.

Ledecky drew his conclusions from informal discussions with people who have implemented computers in business.

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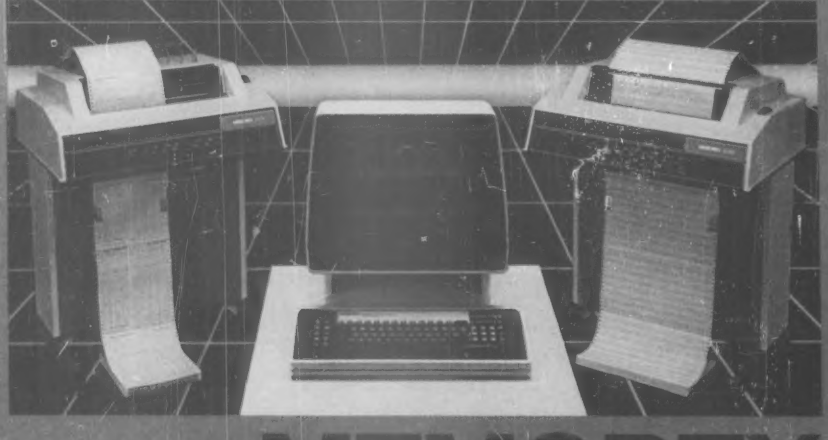
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Micros, E-Mail Intricately Tied

(Continued from Page 95)

fic, the electronic mail services field will be a "wide open area to new entrepreneurs during the next few years," the report said.

On the other hand, "it is a business that ultimately must be championed by large organizations such as AT&T and IBM for the required handling capacity to be developed to service the potential users," the report claimed.

The "most spectacular development" of the technology "could well be the emergence of computer conferencing," which IRD called "a misunderstood tool used primarily by academic institutions and a few leading-edge businesses."

IRD's report is available for $985 from 30 High St., Norwalk, Conn. 06851.

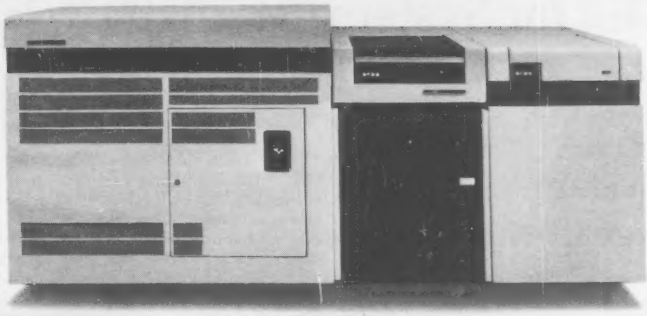
'Memoplan' Fits 8-, 16-Bit CP/M

SAN JOSE, Calif. — Chang Laboratories, Inc. has announced Memoplan, a word processing package for users of either 8- or 16-bit versions of Digital Research, Inc.'s CP/M operating system.

With the package, up to five documents can be produced at the same time. A split-screen feature of the software makes it possible to work on two documents simultaneously.

The package was designed for use by an executive or secretary who might have limited experience with word processing, the vendor said. The package requires a minimum of 64K bytes of random-access memory and two floppy disk drives with a minimum capacity of 150K bytes each.

The package costs $195. The vendor is located at 5300 Stevens Creek Blvd., San Jose, Calif. 95129.



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WP Package Out for System/34

KIRKSVILLE, Mo. — Mako Consulting has introduced a word processing package for the IBM System/34 said to feature spelling assistance, help key instructions and full-screen data entry with word wraparound.

The Mako-Text package also features right justified margin, move, insert, delete, mass letter printing with address insertion from an address file and utility menu items, including copy file and delete file. The text editor requires 24K bytes of memory and is written in RPG-II, the vendor said.

The package is available for $250 from Mako Consulting, P.O. Box 698, Kirksville, Mo. 63501.

Call Accounting System Studies Phone Usage Costs

LEXINGTON, Mass. — NEC Information Systems, Inc. has announced a telephone call accounting system said to interface with virtually any telephone private branch exchange system to analyze phone usage costs.

Astra-Phacs comprises three major functions, including station message detail reporting, traffic management reporting and an attendant directory and message center.

The system runs on Models 230, 250 and 270 of the firm's Astra series of computers and costs $3,000 from NEC Information Systems at 5 Militia Drive, Lexington, Mass. 02173.

Spec Library Introduced

NEW YORK — Bowne Information Systems, Inc. has introduced a master guide specification library available on floppy disks and operable on the IBM Displaywriter word processor.

Spectext On Display writer is aimed at medium-size construction projects with provisions for expansion to larger projects, multiple contract work and construction management work.

The package is available for $2,200 from Bowne Information Systems, 435 Hudson St., New York, N.Y. 10014.

Wang OIS WP System Gets 3270-Emulation Software Aid

CHICAGO — Harris Trust and Savings Bank has introduced an IBM 3270-emulation software package for the Wang Laboratories, Inc. OIS word processing system.

The package is said to enhance the use of Wang's 3270-emulation software by making it possible to convert print spool files into word processing documents. It is written in OIS-Basic and is said to make the conversion in one step without additional formatting or editing.

The package is available for a one-time license fee of $750 from Harris Trust and Savings Bank, located at 111 W. Monroe St., Chicago, Ill. 60603.

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Bought by Dun & Bradstreet

McCormack & Dodge Corp. Is Acquired

By Lois Paul
CW Staff

NEEDHAM HEIGHTS, Mass. — McCormack & Dodge Corp. was acquired last week by Dun & Bradstreet Corp., according to the chairman of its board of directors, James M. McCormack.

Under the terms of the agreement, the owners of the privately held firm will receive $50 million up front. Beyond that, they will garner royalties based on a percentage of revenue growth over the next three years, as well as a percentage of profits over that period, McCormack reported.

McCormack & Dodge, a developer of financial and accounting software packages, was founded in 1969 by McCormack and Frank Dodge, the firm's president. Sales of McCormack & Dodge's products have grown from $90,000 in 1970 to $38.5 million at the end of 1982.

A major motivation for the move, according to McCormack, was the need for research and development funds to support the firm's recently announced Advanced Financial Systems (AFS) methodology. This is a design methodology for developing on-line, real-time functions for existing and new applications that is based on the use of reusable code [CW, Jan. 24, 1983]. When it was announced, John Landry, vice-president of research and development for the firm, told *Computerworld*, "We will probably replace, functionally, all the on-line facilities we currently have on the system. We will be releasing Fixed Assets, General Ledger, Accounts Payable, Purchasing, Payroll and Personnel — all on-line functions under the control of AFS." "We have the new technology, AFS, and to maintain the growth rate as well as to introduce and enhance that technology successfully, we feel that we need to do a lot of investing in the next couple of years," McCormack said.

The basic choice for the firm was either to go public or to be acquired. "When we considered the going-public option, we thought that being a public company would basically frustrate some of our ob-

(Continued on Page 104)

IBM Charges Ex-Employees, Firm With Stealing Formula

By Tom Henkel
CW Staff

SAN FRANCISCO — IBM has charged five former employees, their recently formed company and the venture capitalists backing the firm with stealing IBM's secret formula for developing thin-film read/write heads for disk drives.

In the second such action taken against former employees in the past six months, IBM filed suit March 16 in U.S. District Court here charging Cybernex Corp. of San Jose, Calif., five of the firm's top executives and two investment divisions of the Pittsburgh, Pa.-based Hillman Co. with misappropriating confidential IBM information.

The suit claims Cybernex has infringed on IBM's patents on the thin-film head

(Continued on Page 104)

Seeks Presidential Commission

HP CEO Urges U.S. Tech Plan

By Robert Batt
CW West Coast Bureau

PALO ALTO, Calif. — The president and chief executive officer of Hewlett-Packard Co. has called for the establishment of a presidential commission designed to devise a strategy for the U.S. computer and electronics industry.

In a recent interview here, John A. Young said the purpose of the commission would be to foster debate and develop important issues to a level where some effective action could be taken to counter international competition, particularly from the Japanese.

"The time is right for us to adopt a strategy. There has been a ground swell of concern about our international competitiveness, and I think a presidential commission is one of the most effective things that could be done to provide a coherent set of recommendations that could serve as an underpinning to the policy changes that are needed," Young asserted.

(Continued on Page 108)



John A. Young

Japanese Refute Charges by U.S.

By Jake Kirchner
CW Washington Bureau

Representatives of the Japanese electronics industry have strongly refuted what they termed "biased and distorted" charges by American semiconductor firms claiming they have been harmed by Japanese government programs to foster native high-technology industries.

In a strongly worded statement issued from Tokyo, the Electronic Industries Association of Japan (EIA-J) countered the claims of a U.S. Semiconductor Industry Association (SIA) report released last month in Washington, D.C., that claimed

(Continued on Page 102)

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Japanese Industry Refutes Charges From U.S. Firms

(Continued from Page 101)

the Japanese have unfairly, and in some cases illegally, sought to protect their own semiconductor companies and give them a competitive advantage at home and in the U.S. [CW, Feb. 14].

'. . .the United States successfully achieved its pinnacle in national industrial and technological development by resorting to a pervasive system of tariffs and government intervention and subvention to protect and promote basic industries.'

The Japanese association said in its March 10 statement that the SIA report "is crowded with hyperbole, factual misrepresentations and pettifogging detail." The SIA document, the EIA-J said, reflects "the paranoia involved in the rising crescendo of defamatory criticism singling out Japanese industrial policy.

Commenting on the harsh language in the EIA-J statement, Mike Tsukamoto, a New York representative of the Japanese electronics industry, said the statement reflects the "frustration" of Japanese firms, which feel they are unjustly attacked by American companies for their competitive success. Tsukamoto suggested both countries should stop arguing and find more ways to cooperate.

The EIA-J statement said the U.S. semiconductor industry has benefitted from goverment assistance — through government research and development funds and through military contracts — far more than its Japanese counterpart has from its government's action. In addition, the association said, Japanese industrial policy is different from those of other advanced nations, including the U.S, only in that it is more successful.

"As any American economic historian is aware, the United States successfully achieved its pinnacle in national industrial and technological development by resorting to a pervasive system of tariffs and government intervention and subvention to protect and promote basic industries," the EIA-J said.

"Today, the much less intrusive industrial policy of Japan is under attack, we urge, not because of its structurally biased unfairness as alleged, but because Japan had the temerity to make it successful — as did the United States in promoting basic industries in part through government R&D and procurement subventions."

Adopting Similar Tactics?

The EIA-J argued that while American firms decry Japanese actions, they themselves are moving to adopt similar tactics, such as joint R&D cooperatives and joint government-industry projects. All nations have industrial policies, the EIA-J added, saying "such industrial policies are a proper and legitimate expression of national policy and serve the economic and national security needs of the governments involved.

"Lashing out at what he termed the U.S. "strategy for high technology," Toshio Takai, EIA-J executive vice-president, said Americans perceive high technology as "the only remaining area where the U.S. can still compete internationally. Therefore, it is both 'sanctuary' and 'glory' reserved for American industry, and maintaining eternal superiority over other nations is the sacred duty of the Americans."

The U.S. will do anything it can to "undermine the potential ability of foreign countries" to challenge American high technology superiority, he said."

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Exec Sees IBM Aggressiveness Impacting PCMs

By Robert Batt
CW West Coast Bureau

MOUNTAIN VIEW, Calif. — IBM's increased market aggressiveness is forcing plug-compatible manufacturers to choose between focusing activities on service operations or adopting manufacturing strategies while relying on others to market their products.

This is the view of David Martin, president of National Advanced Systems, Inc. (NAS). A plug-compatible manufacturer that recently abandoned its mainframe manufacturing and development operations, NAS has chosen to focus its efforts on end-user marketing of IBM-compatible CPUs made by Japanese manufacturer Hitachi Ltd.

"It is my belief that there are two types of companies unfolding in the computer industry — those that focus on business operations such as sales, software support and leasing and those that are product-oriented, dealing with technology, system design, manufacturing and quality assurance," Martin said.

NAS had made the decision, he said, to focus totally on business operations, while Hitachi's role, at least as far as exports are concerned, is totally a product operation.

"There is a trend now emerging in the computer business that recognizes that to compete with IBM, you have got to acknowledge that you cannot invest in both these areas across a wide range of products and still get an acceptable return on your investment.

"What allowed us to make the decision we have made is the realization that customers do not want to invest in companies with a narrow field of mainframes. They want a broad-line supplier. What we are witnessing, therefore, is a business trend to deal with the fact that IBM is so massive in its revenues that no one company can go it alone and compete across-the-board on a long-term basis," he asserted.

Martin expects IBM to emphasize two paths within its market segment: continued rapid technological developments in mainframes and a greater penetration of markets that others have pioneered, such as networking, office automation, distributed processing and communications.

"Other companies will need to have very broad systems capabilities to compete and this will require massive investments," he explained.

Over the next five years, the chief executive predicted, the plug-compatible manufacturer field will be reduced to two or three very large broad-line product companies, leaving little or no room for the specialist. "We feel our relationship with Hitachi will be very influential in this process," Martin added.

However, Martin admitted there are risks involved, the chief of which is IBM's power to impact the business of its rivals by aggressive pricing decisions or technology developments.

"Since the [U.S.] Justice Department dropped its antitrust case against IBM, there is no question that the velocity of their business practices has increased," he said.

In such an IBM-dominated environment, user fear, uncertainty and doubt are big problems for NAS, he said. The bankruptcy filing of Magnuson Computer Systems, Inc. (CW, Mar. 14) has become a problem for NAS, he said, because users are concerned about who will be in trouble next.

"Any piece of news that has any negative element associated with the [plug-compatible manufacturers] gets exploded in the mind of the user by IBM," he maintained. "IBM is the standard, so large that, within limits, it can do what it wants, and anyone else compared to it is immediately seen as deficient."

Dyer Resigns From STSC Post

ROCKVILLE, Md. — Daniel Dyer, president and chief executive officer of STSC, Inc., has resigned from his post, effective May 31. Dyer has held the position since he founded the computer time-sharing and software firm in 1969.

STSC, which developed APL and a host of related software products, suffered a loss of $1.8 million in the fiscal year that ended May 31, 1982. The company was acquired by Continental Telecom, Inc. last August.

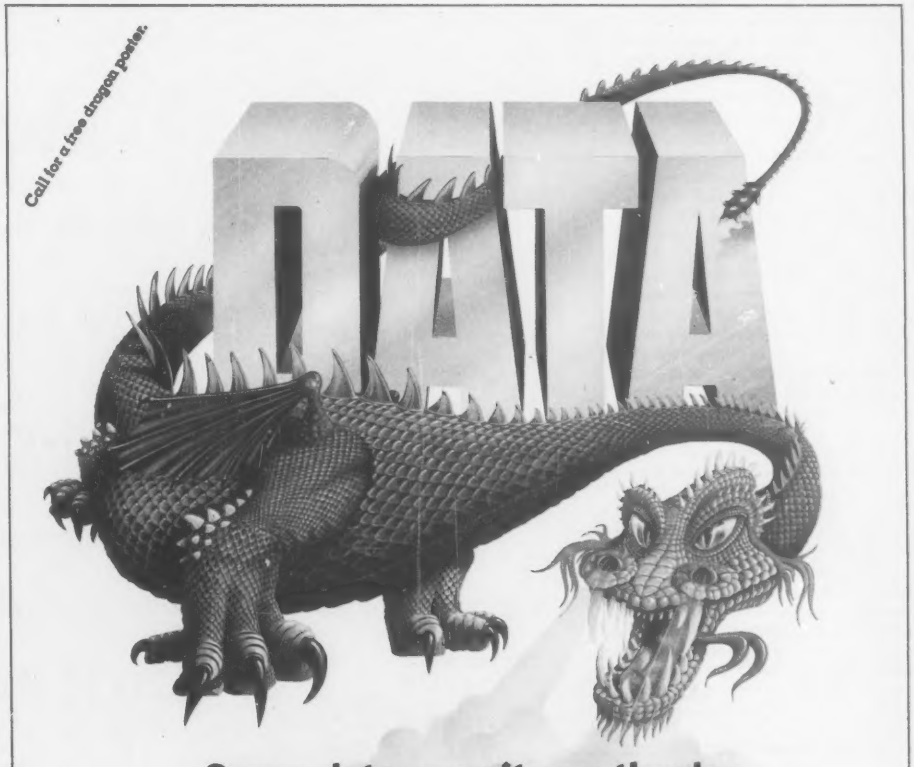
Dyer will continue to serve as a consultant, a spokeswoman said. He has no immediate business plans.

UIS, Intercomp Unveil Joint Marketing Plan

KANSAS CITY, Mo. — United Information Service, Inc. (UIS) and Intercomp Resource Development and Engineering, Inc. have announced the renewal of a joint marketing agreement that provides computer services to computer users in the petroleum industry.

Intercomp is a major developer of reservoir and pipeline simulation software products. Under the agreement, Intercomp's energy recovery products are offered on a remote computing basis through UIS computer services.

The UIS system operates via local telephone lines and UIS' data communications network.



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Dun & Bradstreet Buys McCormack & Dodge

(Continued from Page 101)
jectives. If you are going to go for big growth, it is hard to get a healthy bottom line because you are going to be investing all the time. Yet, if you are public and those closing numbers don't look good, your stock will take a beating," he explained.

Deciding that acquisition was the route to go, the firm discussed this approach with seven companies. "Our phone just kept ringing and people kept saying 'we are interested in your company.' Dun & Bradstreet was one of those."

He said his company liked Dun & Bradstreet, partly because "we feel as though they like our plan. They are intending to leave us reasonably autonomous to pursue the plan, but provide whatever else they can in the form of resources to help us assure that we make it."

The same product line will be continued, McCormack asserted, but the firm also will be able to move that product line toward the microcomputer world much faster with communications-linkage software between micros and mainframes. "Via the AFS technology, we will be able to distribute our products functionally to micros," he said, adding that the firm also will be able to introduce new products more quickly and to acquire products more readily.

The firm rounded out its line of accounting software by acquiring the Human Resources Information System division of Dyatron Corp. of Birmingham, Ala., last year, thereby gaining rights to market and maintain Dyatron's Human Resource Information software package.

McCormack & Dodge will have the same management, same titles, same offices and same location but a different reporting structure, according to McCormack. Instead of reporting to its board of directors, the firm will report to David Fehr, president of National CSS, Inc., another Dun & Bradstreet subsidiary. In turn, Fehr will report to Bob Weissman, executive vice-president of Dun & Bradstreet.

IBM Charges Ex-Employees, Firm With Secrets Theft

(Continued from Page 101)
manufacturing process. In addition, Cybernex President William A. Klein, Senior Vice-President Robert D. Hempstead, Senior Vice-President Ning-Gau Wu, Vice-President of Engineering Surendra Gupta and Vice-President of Administration John A. Dellos, all former IBM employees, were accused of breach of contract and fiduciary obligations, IBM said.

The venture capitalists, HCC Investments, Inc. and CRF Investments, Inc., both of Wilmington, Del., IBM claimed, joined Cybernex to engage in unfair competition with IBM and, therefore, are also wrongfully using IBM trade secrets. The IBM suit went on to name two employees of the Hillman Co., Stephen J. Banks and Stephen N. Hutchinson, as defendants. The two men serve on the board of directors of Cybernex.

IBM claimed it has spent $200 million and more than 14 years to develop and manufacture the thin-film read/write heads currently used in the firm's 3370, 3375 and 3380 disk drives. Cybernex, IBM charged, managed to develop almost the identical process several months after the firm opened for business in October 1981.

But Cybernex President Klein claimed Cybernex developed its manufacturing process based on information in the public domain, namely technical papers and patent documents. Furthermore, Klein contended that since it opened for business in 1981, Cybernex has kept IBM informed of details of its business plans. In fact, Klein said, IBM representatives have toured the Cybernex facilities.

"They [IBM] appear to be claiming the entire process of making thin-film heads belongs to IBM," Klein said, noting that other firms, such as Memorex Corp. and Storage Technology Corp. also have thin-film head projects.

Mark Laskow, general counsel for the Hillman Co., said HCC and CRF Investments both investigated Cybernex before deciding to provide venture capital. Laskow said Hillman's stance is that Cybernex has done nothing wrong and IBM is attempting to restrict competition.

IBM is asking unspecified damages and has asked the court for an injunction enjoining Cybernex from using or disclosing IBM trade secrets or proprietary information. A hearing date has not been set.

The Cybernex case marks the second time in the past six months that IBM has filed suit against its former employees for allegedly stealing trade secrets. In September, IBM fired and charged the three top executives of Bridge Technology, Inc. with allegedly stealing secrets involving IBM's Personal Computer. IBM won that case, which resulted in court injunctions against two of the three employees.

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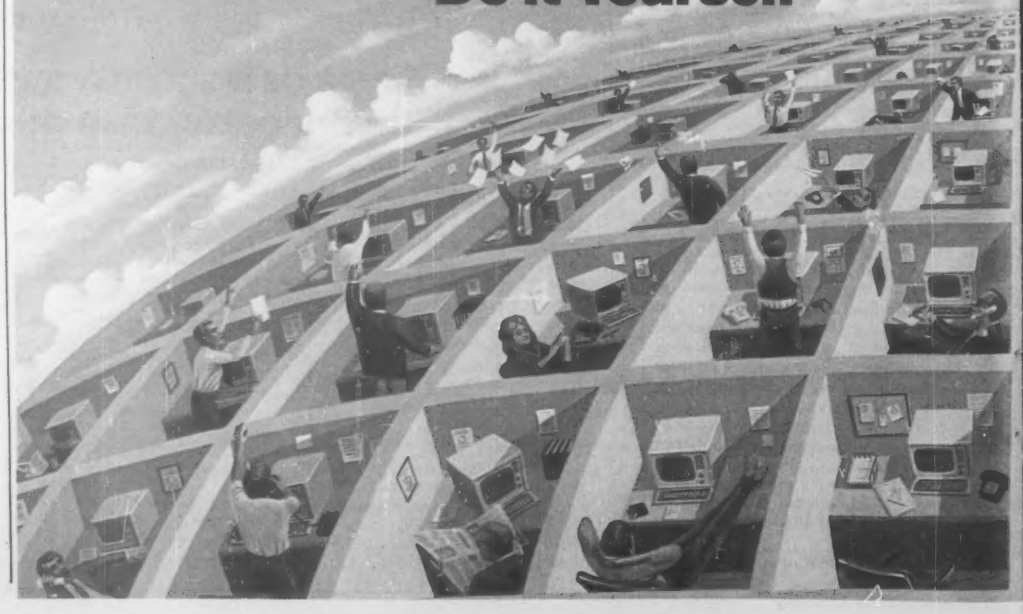
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IDC Exec Says IBM Micros May Surpass Those of Apple

By Patricia Keefe
CW Staff

FRAMINGHAM, Mass. — IBM Personal Computers may surpass those of Apple Computer, Inc. by the second quarter of this year.

So speculated Aaron Goldberg, International Data Corp. (IDC) senior research manager, small systems, while speaking at IDC's annual industry briefing session held here recently. He also suggested that industry watchers might expect to see some "big names" dropping out of the micro market in the future.

The personal computer market in general represents the end of what Goldberg called the first epoch in the information age. The most visible manifestation of this epoch is the "death of the one-size-fits-all micro," such as the Apple II, which was the same in the home as it was in the work place and in the laboratory, he said.

Now, the micro market is divided into three areas: 8-bit home computers selling for as low as $100; 8- and 16-bit general business systems with 64K- to 512K bytes of memory and priced from $1,500 to $7,000; and sophisticated systems, typically 16-bit with 256K bytes of memory and priced from $8,500, Goldberg said.

Visicorp's Visicalc has ignited the business market in much the same way that lower prices have helped escalate home sales, Goldberg said. Alluding to the success of the IBM Personal Computer, Goldberg asked, "Enter IBM, exit who?" He noted that there is much speculation in the business computing area as companies begin to go public. "Look for big names to drop out of the [micro] market," he said.

In a graph contrasting quarterly shipments of the IBM Personal Computer with all Apple products, Goldberg said it is "interesting that while IBM grows, Apple flattens." About the second quarter of 1983, if the trends continue, IBM might surpass Apple on a quarterly shipment rate, he added. "It will depend on what Apple does." Currently, according to IDC 1982 estimates, Apple leads in micro shipments with 33%, just over IBM's share of 26%.

"In the general business systems market, it is price that is remaining fairly constant, while functionality goes through the roof," Goldberg maintained.

Apple's recently announced Lisa business system is now the leading edge in sophisticated micros, Goldberg said, expecting IBM, among others, to enter that market, which he described as "not very big, but prestigious."

ITC Announces Study of Robotics, Seeks Written Submissions

WASHINGTON, D.C. — The International Trade Commission (ITC) has initiated a study of the domestic and international competitiveness of the U.S. robotics industry.

According to the ITC, the investigation will assess "capital, labor, technology and other economic factors affecting the manufacture and use of robotics in the U.S. and in foreign countries." Effects of the increasing application of robotics on the operations of domestic and foreign automobile, aircraft and appliance industries will also be explored.

The commission is seeking written submissions from the public. They will be treated as confidential, if requested.

Submissions should be received by August 12 by the Secretary, U.S. International Trade Commission, 701 E Street N.W., Washington, D.C. 20436.

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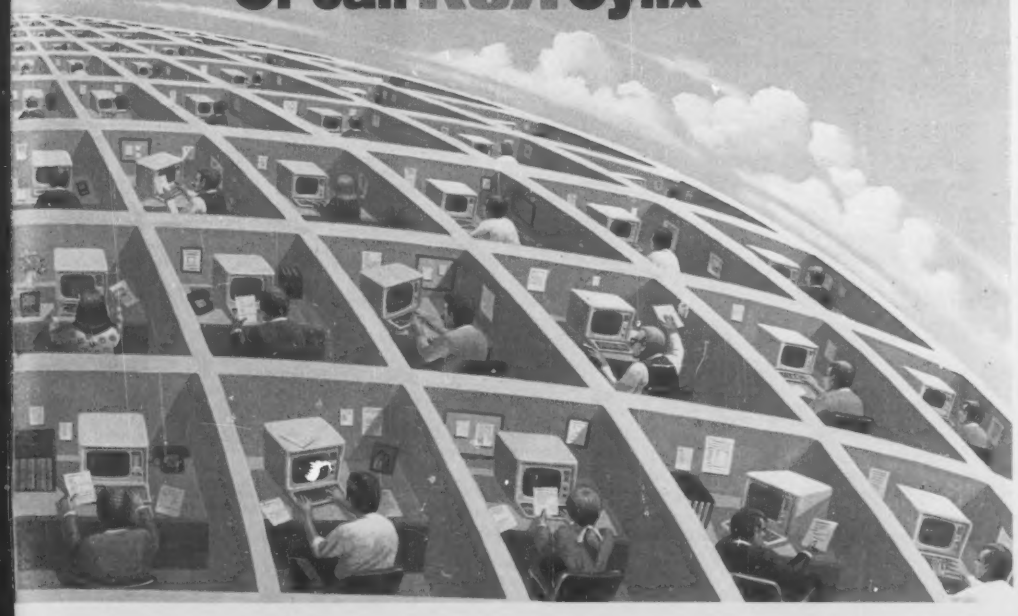
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Hughes, IBM Ink Satellite Ed. Plan

LOS ANGELES — Hughes Communications, Inc. has agreed to provide IBM's National Accounts Division (NAD) with a satellite education program.

Under the agreement, Hughes and its subsidiaries will provide NAD with satellite communications capabilities for a customer and employee education program. The NAD education centers will receive full-motion color video over satellite and will have an interactive audio response capability from the classroom to the instructor.

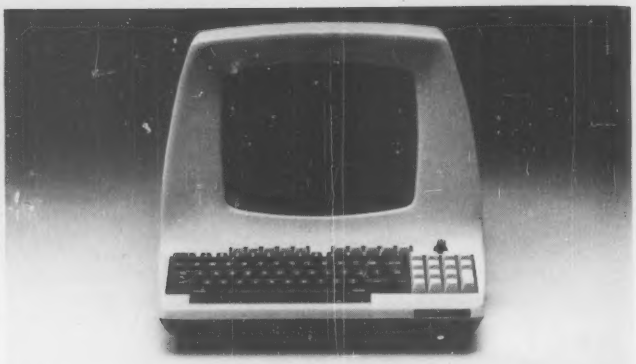
Video, associated voice and data transmission will be provided by Hughes Communications' Galaxy II satellite, which is scheduled to launch in September. Satellite access for three NAD television studios and several education centers will be from terrestrial microwave and earth stations under development by Hughes and related subsidiaries.

The Hughes service is said to be a custom 6/4 GHz system using single channel/carrier techniques for audio and is tailored to NAD education needs. IBM will continue to use and plans an expansion of Satellite Business Systems' 14/11 GHz network for voice and data applications across the corporation.



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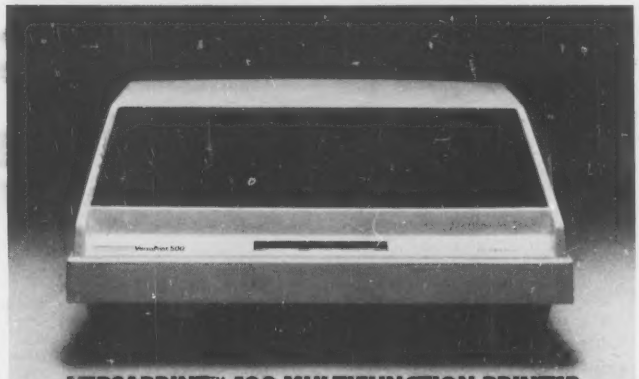
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Dow Jones Inks Pact With III

CULVER CITY, Calif. — Information International, Inc. (III) and Dow Jones and Co. have agreed to develop direct electronic computer-to-plate production of *The Wall Street Journal* and *Barron's National Business and Financial Weekly*.

The technology is intended to compose electronically and plate complete pages with all text, graphics and advertisements in an automated operation. Dow Jones will extend its proprietary laser platemakers and scanners to accept and transmit stored digital data and interface with the III equipment.

The contract provides an option for the purchase of additional systems by Dow Jones.

From Datastream

Rolm to Get 3270 Controller Savvy

SANTA CLARA, Calif. — Rolm Corp.'s Office Systems Division and Datastream Communications, Inc. have signed an exclusive agreement for Datastream to provide Rolm with IBM 3270 controller technology and products for use in gateways from the Rolm Computerized Branch Exchange (CBX) to the IBM environment.

Using the Datastream products in conjunction with its computer-controlled business communications system, the Rolm gateway will provide CBX users access to 3270 applications for most asynchronous Ascii devices such as terminals, personal computers and word processing. The capability can be accessed on a shared basis from local or remote locations, Rolm said.

The gateway emulates the 327X cluster controller using either 3270 Binary Synchronous Communications or Systems Network Architecture/Synchronous Data Link Control networks.

The companies will work together on future enhancements, they announced.

HP CEO Seeks Commission To Devise U.S. Tech Plan

(Continued from Page 101)

The commission, he said, would be in a position to assess the various options proposed by industry groups and associations. It could interact with congressional study groups that have already been established and would be an effective way of developing a national consensus.

"The United States needs to formulate a national response consistent with our own history and free market system. This means a careful examination of public policies to see how they affect America's high-technology industries and what changes would make us more competitive abroad. In this task, the commission could provide a real service and foster debate in such a way that we avoid turning this problem into a partisan political issue," he stated.

The commission's inititial focus, he said, should be on education, because that is where the most urgent, short-term needs are to be found. Young pointed to a shortage of both students and qualified teachers in the computer science field.

Japan produces 2½ times as many engineers per capita as the U.S., while one-tenth of all engineering faculty positions in this country are unfilled. In alleviating this problem, private industry has an important role to play. HP recently committed $6 million to encourage 50 outstanding students to complete Ph.D. degrees, including a $50,000 equipment grant to the university where each candidate elects to teach.

Young also emphasized a need for more attention to manufacturing processing, saying this is an area where the U.S. has much to learn from the Japanese.

The key to Japanese industrial success, he asserted, has been the emphasis given to manufacturing low-cost, high-quality products. "It does very little good for us to develop highly sophisticated technical products if, within a relatively short time, another country can produce a more reliable and cheaper model," Young said.

He called for a greater emphasis in higher education institutions on manufacturing strategy and management and pointed to a $50 million support program from IBM as a step in the right direction. Under this program, IBM will provide cash grants and equipment to five universities, due to be selected within the next few months, for the purpose of teaching engineering design and manufacturing techniques.

Young warned that the cost of not taking effective action to meet the international challenge will be high. The success of the U.S. computer and electronics industries, he said, will be a determining factor in the vigor of the U.S. economy through the 1990s.

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Effect on Displaced Workers

Some Problems Seen With Rush to Automation

Analysis

By Bohdan O. Szuprowicz
Special to CW‡

"Automate or perish" seems to be the the battle cry of computer-aided design and manufacturing (CAD/CAM) proponents. Yet manufacturers are not rushing blindly to install masses of CAD/CAM systems and robots, connecting the same through highly touted local networks into the so-called "factory of tomorrow."

One important concern is the uncertainty of the effects of massive, simultaneous factory or office automation on labor that will be displaced. With some 30 million unemployed in the Western World, the problem has far-reaching implications.

Those who point to Japanese successes with robotics and the automated factory tend to forget the organized docility of Japanese labor and the social infrastructure of a nation whose people are almost exclusively Japanese. The educational system and resulting remarkable degree of discipline that can be imposed on the Japanese is almost impossible to duplicate elsewhere.

Also, the automation unemployment issue is beginning to catch the eye of politicians, who may soon be hard pressed to promote new legislature controlling the spread of automation or impose obligatory retraining programs on those manufacturers whose automation programs result in excessive displacement of workers.

During the last 20 years, many firms implemented a significant number of computer-aided solutions wherever they could be profitably used. In a number of instances, corporations went all out to design massive computer-based DP systems, only to realize the return on investment was questionable at best and hard to measure in most cases.

Manufacturers generally use a classical bottoms-up approach in automating small or isolated functions with CAD/CAM. Such systems are more often than not hardware and software incompatible and incapable of being integrated later into a cohesive larger system. System inflexibility, diminished user control and poor data quality and accessibility within existing corporate structures are serious barriers to effective automated control.

The solutions now proposed are to create standardized data bases to act as corporate buffer structures, connecting all functional areas of a manufacturer. On the other hand, current technologies require inputs of various function groups be standardized, which again could be a costly and lengthy procedure.

An alternative data base buffer structure should be able to accept diverse inputs at random and have the capability to filter out the crucial data, which could then be presented to corporate management for action. But the technologies to do so are not yet in place.

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Executive Corner

• **Don House** and **Dennis V. Vohs** have been named executive vice-presidents of Management Science America, Inc.

• **Russell F. Henke** has been appointed vice-president, mechanical engineering and manufacturing products, at Applicon, Inc.

• **Richard H. Kling** has been appointed vice-president, sales, and **James J. McKeef**, vice-president, marketing, at United States Satellite Systems, Inc.

• **H. Haagsma** has been promoted to the newly created position of vice-president, manufacturing operations, at Pertec Computer Corp.

• **Jack A. Bradley** has joined Bridge Communications, Inc. as vice-president and chief financial officer.

• **Bruce Smith** has been elected executive vice-president and chief operating officer of Software AG Systems Group, Inc.

• **Randolph Richmond** has been named president of ICL, Inc., the U.S. subsidiary of International Computer, Ltd., UK.

• **Philip C. Davy**, founder of Infoscribe, Inc. and president of the firm since 1979, has assumed the post of chairman of the board and chief executive officer. He has been succeeded by **David M. Connell**.

• **John E. Bertram** has been named president of IBM's General Products Division, succeeding **Arthur G. Anderson**, who was named to a newly created position in which he will review coordination between research and development activities.

• **Gary Arnold** has been promoted to vice-president and chief financial officer at National Semiconductor Corp.

• **Edward W. Carter** has been named senior vice-president of marketing for MCI Communications Corp.

• **David R. Mackie** has been appointed vice-president, U.S. marketing at Tandem Computers, Inc. following the resignation of **Charles W. Ryle**.

• **Jerry T. Ungerman** has been appointed vice-president and general manager of business operations at National Advanced Systems, a subsidiary of National Semiconductor Corp.

• **John Walsh** has joined The Braegen Corp. as vice-president and general manager of field engineering.

• **Marvin G. Kirby** has been appointed vice-president, domestic sales, at Prime Computer, Inc.

• **Charles Riddle** has joined Ross Systems, Inc. as vice-president of marketing.

• **Seth Hanover** has been promoted to senior vice-president; **Martin Aronow**, vice-president, Atlantic region; and **Paul Rosenthal**, vice-president, Pacific region, at Software Design Associates, Inc. **William Kirschner** has joined the company as vice-president of finance.

• **Eli Porat** has been appointed vice-president of operations for Sytek, Inc.

• **Paul W. Shields** has been promoted to vice-president, Pan American Operations, at Control Data Corp.

• **David R. Vincent** has been named vice-president of Boole & Babbage, Inc. He will continue as general manager of the Institute for Software Engineering, an independent division of Boole & Babbage.

• **Hatim A. Tyabji** has been promoted to vice-president, hardware products, for the computer systems operations of Sperry Univac.

• **Neal Dempsey** has been appointed vice-president of marketing for Zentec Corp.

• **Ron Grindstaff**, formerly of Intel Corp., has joined Envision Technology, Inc. as vice-president of operations.

• **Robert G. Chapman** has been elected an executive vice-president of the National Bank of North America.

• **Harry Colgate** has been appointed executive vice-president of North Atlantic Industries.

• **H.L. Sparks**, formerly director of retail sales for IBM's Personal Computer, has joined Compaq Computer Corp. as vice-president of sales and service.

• **Vincent L. Tofany** has been elected a corporate vice-president of Mohawk Data Sciences Corp. and appointed president of the company's Dek Identification Systems Division.

• **Les Briney** has joined International Digital Electronics Associates as vice-president for systems engineering.

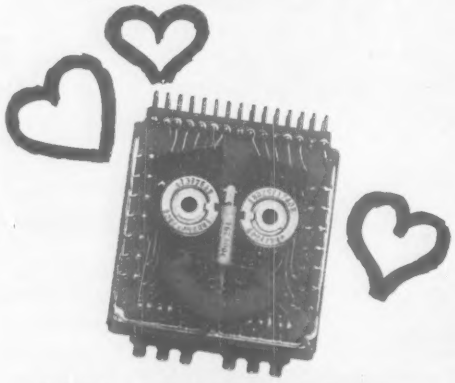
Williams Named as President, Chairman of Board at Geisco

FAIRFIELD, Conn. — The General Electric Information Services Co. (Geisco) has named Walter W. Williams its president and chairman of the board. He will succeed Gregory J. Liemandt, who announced recently that he will leave the company this week.

Williams joined General Electric Co. 27 years ago and held various positions in the company's consumer electronics business before being named vice-president of the GE Housewares and Audio Business Division.

Liemandt, 39, will become chairman and chief executive officer of Wyly Corp. in Dallas. Liemandt cited Wyly's "independence" and an attractive offer as reasons for leaving Geisco. While at Geisco, Liemandt increased the firm's value-added services while acquiring several key software firms in recent months, including Software International Corp. and Lamda Technology, Inc.

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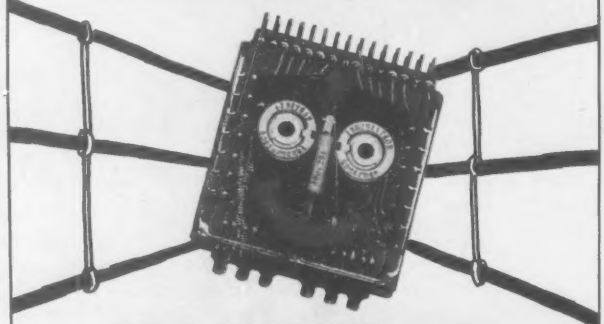
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At Colorado Operations

STC Lays Off 500 Workers

LOUISVILLE, Colo. — For the second time in six months, Storage Technology Corp. (STC) has announced major layoffs, this time affecting 500 employees in the company's Colorado operations. The layoffs are effective today.

STC dropped 400 people from its U.S. work force last November, the company's first major layoff in its 13-year history. At that time, Jesse Aweida, STC's chairman and founder, issued a pessimistic profit outlook for 1982, but added that the outlook for 1983 was rosier.

The most recent layoffs were spurred because the strong demand foreseen by Aweida for STC's data storage products has not materialized.

"During 1981 and early 1982, we significantly expanded many non-manufacturing operations in our Colorado work force because we anticipated continued strong demand for our disk data storage products . . . That demand has not continued and we find we must reduce our costs to keep them in line with the business that is available."

Aweida maintained that the second half of 1983 will see an upswing in STC's business, at which time the laid-off employees will be recalled.

Intel to Cancel Pay Cuts, Freezes

SANTA CLARA, Calif. — Spring thaws can happen in California too. That is good news for employees of Intel Corp., who learned last week that the firm will phase out pay cuts and pay freezes announced early this year.

According to Intel, half of the pay cut, which ranged up to 10%, will be restored starting April 1. If profitability continues to improve, the other half of the cut will be restored July 1, and merit increases will resume at that time, the company said.

Intel's apparent financial turnaround comes on the heels of a December announcement that IBM had purchased 12% of the microprocessor components and systems manufacturer. Under that agreement, IBM invested $250 million in Intel, reportedly to fund extensive research and development.

The IBM involvement had led industry watchers to believe Intel was on the verge of making big gains on the semiconductor market. In a recent report, Prudential-Bache Securities, Inc. noted that "Intel is the best-positioned company to participate in the very rapid growth we expect in the semiconductor industry over the next two or three years." It predicted that the semiconductor market will grow by 21% over the next five years.

Andrew S. Grove, Intel president and chief executive officer, credited Intel employees with cutting costs and increasing productivity.

Matsushita Caps Deal With IBM

ARMONK, N.Y. — Capping a February announcement of joint manufacturing talks [CW, Feb. 21], IBM has announced that Matsushita Electric Industrial Co. of Tokyo will manufacture a personal business computer developed by IBM to be sold only in Japan by IBM. It will be the first-ever IBM computer system made by another company.

Matsushita will make the 5550 Multistation, a Japanese-language word processor and personal computer. Based on the Intel Corp. 8086 microprocessor, the 5550 was developed in Japan by IBM's subsidiary there, IBM Japan Ltd.

Shipments of the 5550, which will sell for about $4,195, will begin in June.

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Mergers & Acquisitions

Computer Products, Inc., Fort Lauderdale, Fla., has completed acquisition of **Compower Corp.**, San Jose, Calif. Compower will operate as an independent subsidiary of Computer Products and as a unit of the company's Power Products Group.

Micro Peripherals, Inc. (MPI) has acquired the floppy disk operations of **Information Magnetics Corp.**, a subsidiary of Computer & Communications Technology Corp., in exchange for an undisclosed amount of MPI common stock.

Banctec, Inc., Dallas, has reached an agreement in principle with **Input Business Machines, Inc.** (IBMI), Frederick, Md., to acquire all shares of IBMI for 494,280 shares of Banctec stock.

Data Terminal Leasing, Inc. and **Compuleasing**, both of San Diego, have merged their assets and are now operating as **Data Terminal Leasing, Inc.** The firm has relocated to new facilities at 4805 Mercury St., San Diego, Calif.

Esprit Systems, Inc., Commack, N.Y., has completed the purchase of **Hazeltine Corp.'s** computer terminal equipment product line. Esprit Systems is a new company formed by an internal management group, Rosenkranz & Co, New York, and Oxford Partners, Stamford, Conn.

Applied Devices Corp., Palm Beach, Fla., has announced the sale of the company's Datatrol Business to **Addressograph Farrington, Inc.**, which will assume both Datatrol's $3.3 million industrial revenue bond and up to $4 million of debt to banks. Addressograph will also pay a 5% royalty on certain sales over a five-year period. For the fourth quarter of fiscal year 1982, the company reported sales from continuing operations of $6,444,000 and a net loss from continuing operations of $3,982,000, or 85 cents per share.

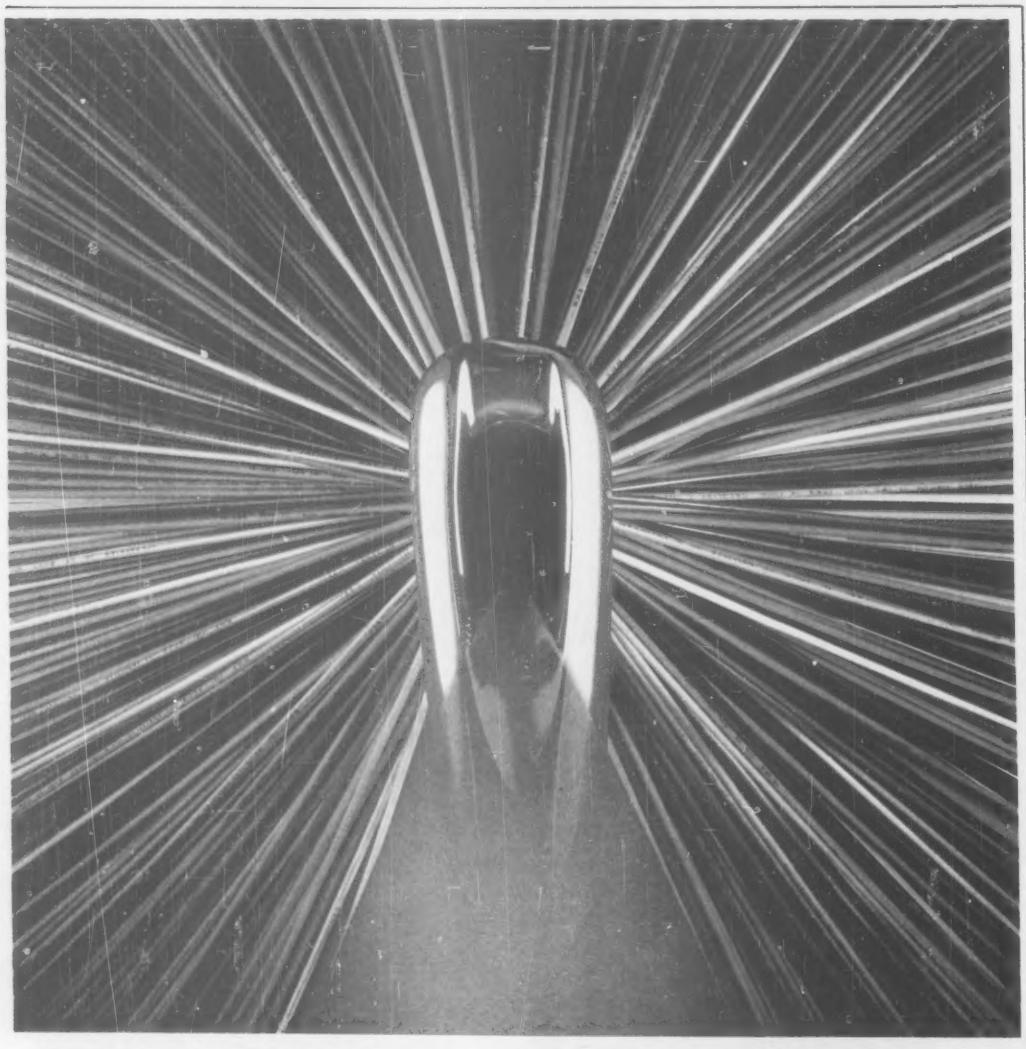
Pansophic Systems, Inc. has acquired **Software Generation Technology Corp.'s** SGT query and reporting system for CICS.

Honeywell, Inc. has purchased the stock of **Florida Communications Consultants, Inc.** of Miami, a firm that sells, installs and services business communications systems. The company will operate as a subsidiary of Honeywell under the name Honeywell-Florida Communications.

Logicon, Inc. has completed acquisition of **R&D Associates** of Marina Del Rey, Calif.

Atlantic Management Systems, Inc. and **International Systems, Inc.** have merged to form **AGS Management, Inc.** The new company, a wholly owned independent subsidiary of AGS Computers, Inc., will maintain dual headquarters at 890 Valley Forge Plaza, King of Prussia, Pa., and 320 Walnut St., Philadelphia, Pa.

United Technologies Corp. has acquired **American and Electronics Corp. (ACE)** of Gaithersberg, Md., for $4 million. The advanced systems engineering organization, which comprised 85% of ACE, has become a unit of United's Norden Systems. The remaining 15%, which provides commercial computer software for independent telephone companies, was sold back to a group of former ACE employees for $600,000. The group is operating as **American Computer and Electronics Corp. International.**



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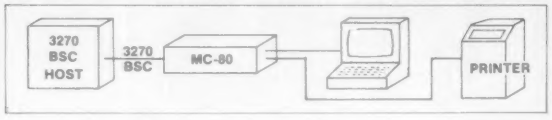
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Hitachi Targets Systems To Distributed DP Market

NEW YORK — Hitachi Ltd. has added to its M-series of mid-range computers with the unveiling of two systems aimed at the distributed data processing market.

The company claims the two systems, neither of which will be available immediately in the U.S., outperform the IBM 4341 and 4331 on a price/performance basis by an average of 35%.

The company also took the wraps off a compact magnetic tape unit that reportedly runs in either start/stop or streaming mode, a relational data base manager and a software development tool that is both Cobol- and PL/I-compatible.

Both systems and the tape unit will be available in Japan either this fall or early next year.

A 4341 Rival

Running under both the Virtual Storage Operating System 1/Extended System (VOS1/ES) and Virtual Machine System (VMS) operating systems, the internal processing speed of the M-220K is approximately 1.6 times that of the vendor's M-220H, Hitachi said.

The system, a competitor of the 4341, contains 2M bytes of main storage in its basic configuration and can be upgraded to 8M bytes. An M-220K holding 4M bytes of main storage, 2,540M bytes of fixed storage, two disk storage units, a 1,500 line/min line printer, five data terminals and three serial printers rents for $18,750/mo.

Competitor to the 4331

The M-220D, which is also compatible with the VOS1/ES and VMS operating systems, has approximately 70% of the M-220H's processing power and is the competitor of the 4331. The machine's basic configuration includes 1M byte of main storage, but is also upgradable to 8M bytes.

With 2M bytes of main storage, 300M bytes of removable disk storage, a 600 line/min line printer, two data terminals and a serial printer, it costs $7,500/mo to rent, according to the vendor.

Hitachi said it has no immediate plans to market the systems in the U.S.

The Relational Data Base Manager 1 (RDB1) stores and processes any data in the data base in table form, making data handling possible, according to a spokesman.

The Auto Documentation Aid System (Adcas/S) software development tool is Cobol- and PL/I-compatible and automatically generates documents for software maintenance and problem analysis.

Also expected to be available in Japan but not the U.S., the RDB1 will make its debut in September 1983, at a rental cost of $1,083/mo. The Adcas/S carries a monthly rental price of $146/mo and will be available in January 1984.

More on the two systems, magnetic tape drive and software development tool can be obtained from the vendor at 470 Madison Ave., New York, N.Y. 10027.

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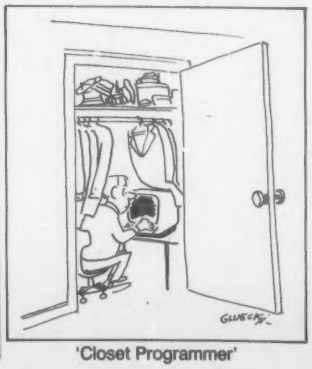
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Visual Technology, Inc. has recorded net earnings for the year ending Dec. 1, 1982 of $2,843,000, up 44% over 1981. Net earnings per share increased 24% to 78 cents, and sales for 1982 were $25,805,000, compared with $18,044,000 for 1981.

$ $ $

VLSI Technology, Inc. has completed an initial public offering of 4,400,000 shares of common stock at $13 per share through an underwriting group jointly managed by L.F. Rothschild, Unterberg, Towbin and Hambrecht and Quist, Inc.

$ $ $

Modular Computer Systems, Inc. has reported sales in 1982 of $92,770,000, compared with $87,200,000 for 1981. Net income totaled $1,790,000 or 34 cents per share, compared with $1,160,000 or 22 cents per share for 1981.

$ $ $

Analog Devices, Inc. has announced a three-for-two stock split in the form of a 50% stock dividend to be distributed on April 4, 1983 to stockholders on record as of March 18, 1983.

$ $ $

Computer & Communications Technology Corp. has reported that revenues for 1982 were $74,717,000, a 13% increase over 1981's $66,208,000. Fourth quarter revenues were $16,014,000, 13% below the 1981 fourth quarter. Net income for the year and fourth quarter was $5,103,000 and $168,000, a decline of 18% and 92%, respectively.

$ $ $

Science Management Corp. has announced net income for 1982 of $347,000 or 16 cents per share on sales of $46,466,000. Net income in 1981 was $1,266,000 or 62 cents per share with sales of $46,949,000. Earnings for 1982 were adversely affected by the start-up of a joint venture and unusual expenses related to stock appreciation rights, according to a company spokesman.

$ $ $

AGS Computers, Inc. has reported revenues of $65,026,000 for 1982, an increase of 68% over 1981. Net income increased by 38% to $2,484,000, and earnings per share rose from 57 cents to 73 cents.

Expansions

Hewlett-Packard Co. has moved its Pittsburgh, Pa. operations into a 37,000 sq-ft facility at 111 Zeta Drive. The new building is nearly four times larger than the firm's former Pittsburgh sales office.

Wang Laboratories, Inc. has broken ground for a 200,000 sq-ft manufacturing facility in Holyoke, Mass. Completion of the facility, which will also include warehouse and office space, is scheduled for fall 1983.

Telmos, Inc. has moved its corporate headquarters, marketing and manufacturing operations to a new 25,000 sq-ft facility at 740 Kifer Road, Sunnyvale, Calif. 94086.

Eaton Corp.'s Data Systems Services Division has opened its new headquarters at 5875 Green Valley Circle, Culver City, Calif.

Charlton Associates, Inc. has moved administration and manufacturing operations into a new 30,000 sq-ft building at 1 Marconi, Irvine, Calif.

New Companies

Ashland Automation Services, Inc. is a subsidiary of Ashland Services Co., a wholly owned subsidiary of Ashland Oil, Inc. The firm will offer a variety of computer and office systems as well as planning and technology services. Information can be obtained from Ashland Oil, through P.O. Box 391, Ashland, Ky. 41111.

Supersearch is a data base search service with emphasis on the federal sector. The company is a subsidiary of Chatham Group, Inc., which can be reached through P.O. Box 15181, Arlington, Va. 22215.

Pronto Computers, Inc. has been formed to design, manufacture and market business computers, peripherals and software. Corporate headquarters is at 3170 Kashiwa St., Torrance, Calif. 90505.

Shields Computer Services, Inc. is a company that provides software for banking applications, new and used computers, office supplies and software maintenance service. Franchises are available. The firm is located at Suite 330, 8080 E. Central, Wichita, Kansas 67206.

BSF Consultants is an office systems planning service offering consultation in office automation, word processing, telecommunications, personal computers and all office support services. It is located at 197 Tenth Ave., New York, N.Y. 10011.

Learn more about Personal Computing, Office Automation or Communications in these video journals from CW Communications and Deltak.

Personal Computing: A Business Perspective
Taped on location during CW Communications' COMPUTERWEEK conference, these six video sessions feature many of the biggest names in the microcomputer industry as they share their insights into the application of personal computers in the business environment. Each of the six tapes is 20-30 minutes long, and focuses on a specific issue. Available through Deltak singly or as a group.

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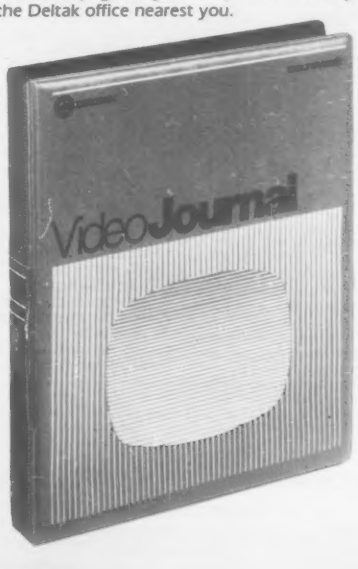
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Last Fall, executives from around the country attended the OA Forum, a national conference conducted by CW Communications on the introduction, integration and implementation of office automation in today's business environment. Leading industry experts and top corporate managers discussed key office automation planning issues. These discussions are now available to you in seven carefully edited conference journals. Each journal is in full color, and 20-30 minutes long. They are available from Deltak singly or in a group.

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- *Planning for Office Automation*
- *The Fundamentals of Integration*
- *Some Specifics of Integration*
- *The Executive Workstation*
- *One Company's Experience*
- *Introducing Office Automation to Your Organization*

Communications
Leading experts in all areas of communications were recently taped at the 1983 Communication Networks Conference in New Orleans. Many hours of material are now being edited to produce a new conference journal series to be available in the late Spring through Deltak. Specific sessions are not yet decided, but overall topics will be:

- *Communication Networks*
- *Local Area Networks*

All of these useful journals are available through Deltak, inc., 1751 Diehl Road, Naperville, IL 60566. To get more information, or to find out about rentals, just call Deltak Order-Entry at (312) 369-3000 (in Canada, (416) 678-9222), or check the white pages of your telephone directory for the Deltak office nearest you.

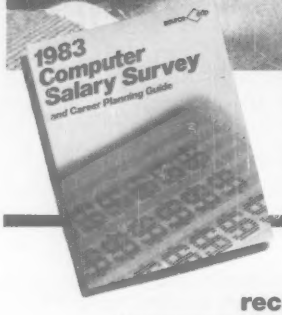


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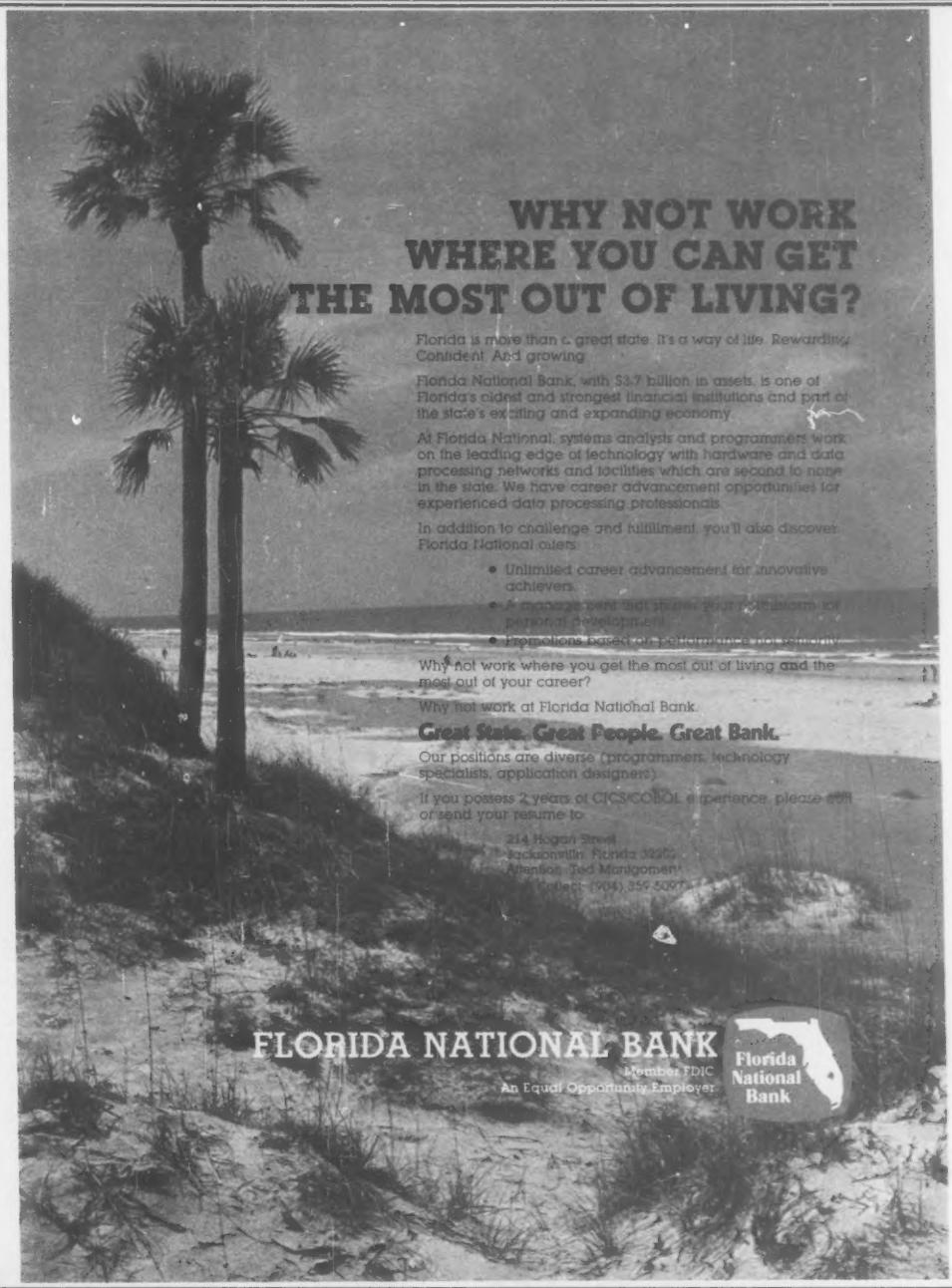
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Davidson College invites applications for the position of Director of its Computer Services Center. The director supervises a staff of seven professionals and the operation of two Prime computers (750 and I-1000), 81 terminals and printers, 5 microcomputers, 6 DEC word processors and communications with TUCC. This installation, begun in September 1981, is expanding in both hardware and software acquisitions as computer processing is used in new ways in the curriculum and the administration. The position requires a person with strong managerial, administrative and communicative skills to lead the college in developing new computer applications. Candidates should have a working knowledge of on-line computer systems, distributive processing, microcomputer systems and telecommunication techniques and a familiarity with database systems, text editing, and sources of material for academic instruction. The duties and responsibilities of the director include the overall supervision of the computer systems used for academic and administrative purposes, long-range planning for future system growth, and the direct supervision of the computer services staff. Knowledge of both academic and administrative computer services staff. Knowledge of both academic and administrative computer needs is important. A Ph.D. in a field appropriate for a liberal arts college and some teaching experience is desirable although not essential. Letters of application and nomination should be sent to Dr. T.C. Price Zimmerman, Vice President for Academic Affairs, Davidson College, Davidson, North Carolina 28036. Review of applications will begin April 15, 1983. Equal Opportunity Employer.

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Oppenheimer Asset Management Corporation, a high growth company involved in servicing mutual funds with over 900,000 shareholder accounts, is currently running an IBM 3033 OS/VS-1 and has an excellent opportunity for a Programmer/Analyst.

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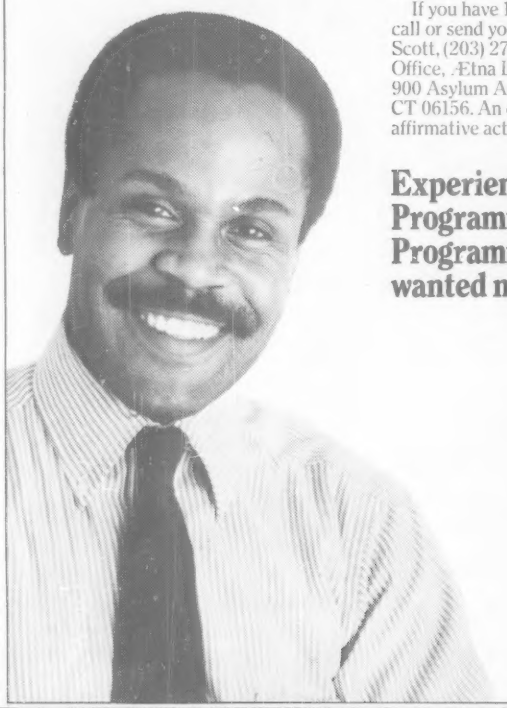
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Responsibilities include: analyzing current and proposed systems software and testing effects of new and modified installations. Also will prepare instructional materials and develop standards for use and operation of systems software. Will be working in an environment with recently installed dual IBM 4341s.

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SJ

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The County of Kent, Michigan, seeks Director of Data Processing responsible for overall implementation and maintenance of centralized County DP system which provides comprehensive systems & programming support to 15 County depts. plus limited service to 21 twps., 7 cities, & 5 villages. Systems include County-wide financial information & property tax admin. systems, and case mgt. systems for child support, criminal justice, public health, & mental health. DP budget $1 + Mill. with 14 prof. & tech. support staff. Operate on HP-3000, IBM-4341, & TI-990.

Require bachelors in related field, or equivalent, & min. 5 yrs. successful & progressively more responsible project mgr. or admin. experience. Require proven mgt. & interpersonal skills. Prefer governmental DP exper. & knowledge of appropriate financial procedures & County statutes.

Salary open. Liberal benefits. Send resume, salary history, & personal references by 5-1-83 to **Kent County Personnel Dept., 300 Monroe N.W., Grand Rapids, MI 49503.** EEO Employer.

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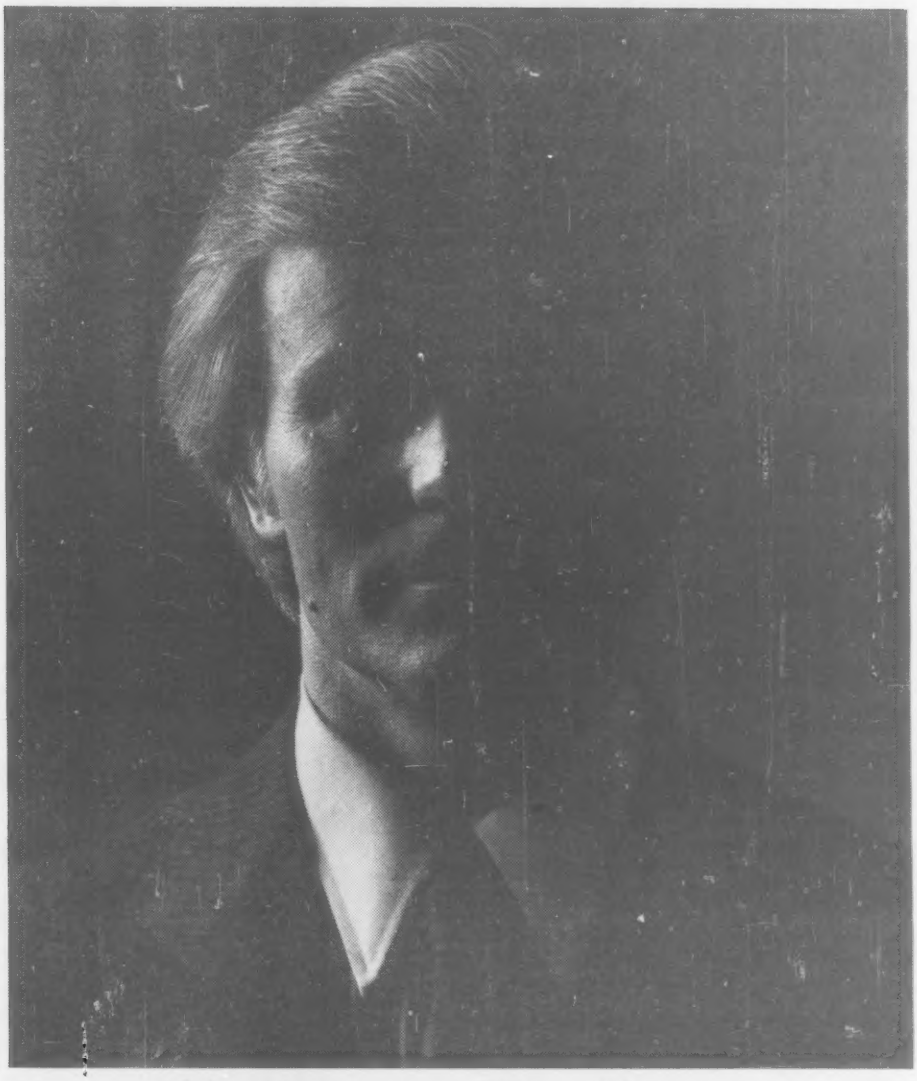
Call or send resume or rough notes of objectives, salary, location restrictions, education and experience (including computers, models, operating systems and languages) to either one of our locations. Our client companies pay all of our fees. We guide, you decide.

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Modus Operandi:
Subject individual is currently generating significant revenues, either for himself or his employer, by managing, marketing, brokering, or selling any type of dp service or product. We want him or her to generate revenue and profits for the Professional Services area of Informatics using the methods he or she knows best.

Last seen:
Subject may now be operating anywhere in North America. If captured by Informatics, the fugitive could face extradition to New York, or serve time for Informatics where apprehended.

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The fugitive faces a career opportunity managing or selling consulting services for Informatics, one of America's leading software firms. The sentence carries a full benefits program and unlimited earnings under a compensation package tailored to his or her individual needs.

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1. Will handle distribution/sales/marketing using RPG III on the IBM System 38. BS degree or equivalent plus at least 2 years programming experience required.

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- Degreed individuals with minimum of 3 years experience in the following areas: microprocessor firmware, SNA, packet and BISYNC protocols, computer networking and communications software applications.
- These senior level positions will concentrate on conceptualizing and defining the next generation of communications software and hardware systems to be developed by GOULD S.E.L. Candidates for these positions should have a minimum of seven (7) years experience in all above described discipline requirements, plus a solid understanding of the hardware-related aspects of designing cost effective solutions to tomorrow's communications problems. Will also be involved in feasibility studies pertaining to the communications area.

We offer excellent salaries and comprehensive benefits. For immediate and confidential consideration, send your resume, including salary history, to Sue Abbondante, Dept. CW328, **GOULD INC.**, S.E.L. Computer Systems Division, 6901 W. Sunrise Blvd., Ft. Lauderdale, FL 33313. An Equal Opportunity Employer, M/F/H.

Electronics & Electrical Products

WYOMING

Higher Education Computer Network

The Wyoming Higher Education Computer Network (WHECN) is operated by the University of Wyoming to serve the instructional and administrative computing needs of the State's seven community colleges. Each college has substantial administrative and academic computers in addition to a connection to the CDC CYBER 730 and 760 computing facility at the University in Laramie. Two positions are available and will be filled as soon as qualified applicants are located.

Manager/Programmer

This position will report to the Director, Division of Computer Services, and will have the responsibility for coordinating all WHECN activities. Duties will include budget, recommendation and monitoring, planning, procurement, and coordinating maintenance and operation of the WHECN computing facilities. Programming support and analysis will also be required to ensure the highest quality computational service to the community colleges. The Manager will supervise two other professional personnel.

A bachelor's degree and proven excellence in verbal and written communications skills are required as is a broad technical knowledge and firsthand experience of computational requirements within an educational institution. Six years of related experience including two years of supervisory experience is necessary. An advanced degree is preferred.

A substantial amount of in-state travel will be necessary. Salary range is $25,392 to $38,088. Starting salary will not exceed $31,740.

Coordinator - Instructional User Services

This position will coordinate all academic computing activities for the seven Wyoming Community Colleges. This includes systems programming (compilers, operating systems), software and hardware installation, applications and package support, as well as consulting services to faculty and staff. Computer assisted instruction, graphics, and communications are some of the most active projects.

A bachelor's degree in Computer Science or a related field, or an equivalent combination of education and experience is required. At least two years of related experience in computer use and application is necessary.

This position will require some travel within the state. Salary range is $21,336 to $32,004. Starting salary will not exceed $26,676.

These positions offer a full University benefit package. Location is in Laramie, a pleasant city with a population of 25,000 in the Rocky Mountain area and home of the University, which serves 10,000 full-time students in all disciplines.

Qualified candidates should forward their resumes, current salary information, and three references with telephone numbers to Charles A. Folkner, Director, Division of Computer Services, P.O. Box 3945 University Station, Laramie, Wyoming 82071.

The University is an Equal Opportunity/Affirmative Action Employer.

BUSINESS COMPUTER PROGRAMMING INSTRUCTOR:

Must have a Bachelors Degree and 1 and 1/2 years business experience or an equivalent combination of education and/or experience. Masters Degree and teaching experience preferred. Must have the ability to teach DOS/VSE, ICCF/CICS, VSE, VSAM, RPGII, data base, ALC, PASCAL, and systems analysis and design on an IBM 4331.

Direct responses to: Eastern Iowa Community College District, Personnel Dept., 2804 Eastern Avenue, Davenport, Iowa 52803.

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The University of Scranton is seeking qualified applicants for the newly-created position of Academic Computing Support Manager. We need a dynamic and creative individual to assist academic users engaged in computer-related projects; to identify academic activities which would benefit from computer application; to keep the faculty informed of current academically related hardware and software developments; and to provide for the software needs of academic programs and research projects.

The manager we seek should have an academic background and professional interest sufficient to facilitate interaction with a diverse faculty. He/she should have work experience with computer usage in an academic environment. Excellent communication and organizational skills are required for maintaining active relationships with in-house computer support groups and with outside vendors of hardware and software.

This is a senior staff position that reports directly to the Academic Vice President.

The University of Scranton is a Jesuit institution located in Scranton, a city with a population of 90,000. Scranton and Wilkes-Barre form the cultural, medical, retail and industrial center for Northeast Pennsylvania. The campus is within minutes of affordable residential housing in beautiful wooded hillsides. Four seasons of outdoor recreational activities are available in the nearby Pocono Mountains. The attractions of New York City and Philadelphia are only two hours away.

Applications should be sent by April 8, 1983 to:

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Search Committee
School of Management
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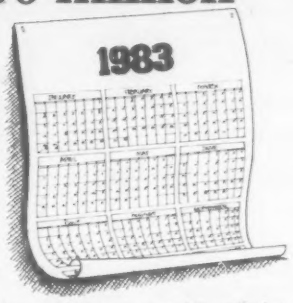
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Participate in the specification, design, debugging, testing and documentation of complex programs. Involvement includes networking operating systems. Requires 2-4 years' design experience demonstrating a working knowledge of Z-80, 8086, 68000 and/or C. Exposure to hardware design a plus.

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Develop new peripheral software to run different applications and specialized arabic and scientific editors for a number of output devices including printers and typesetters. Requires 2-4 years' experience programming microprocessors and a working knowledge of PL/M and Z-80. BSCS or equivalent.

For the preceding positions, send resume with salary history (specifying position of interest) to Sam Keaton, Wang Laboratories, Inc., Dept. CW328, One Industrial Avenue, Lowell, MA 01851.

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Wang is making singular advances in the field of videodisc-based computer aided instruction. The CAI Systems Development Group includes experienced professionals in the areas of hardware and software development, video production and instructional design. This group represents a rare opportunity for you to combine your talents with these other specialists and set new standards for this technology.

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Define and implement advanced CAI technology designed to support Wang office automation and data processing computer architectures. Will work with a small research oriented group, attempting to integrate voice, images, data and procedures for a state-of-the-art CAI product. Must be comfortable with firmware and hardware interfaces, and be capable of working with prototype systems. While the ultimate application is interactive education, you must have several years experience or education in systems programming. Interest or familiarity with authoring languages or a strong commitment to ergonomics and human engineering is important. Experience with, and interest in imaging technology, integrating video and graphics is desirable.

Senior Scriptwriter

As a key member of the Courseware Development Team, help define the courseware products by contributing expertise in scriptwriting and video production. Implement the course design by writing quality videodisc-based interactive learning production scripts, monitoring the production group at all stages. Contribute to new course plans and the on-going development of the group. Requires a minimum of 3 years' industry-related experience in scriptwriting and video production and a keen interest in computer-aided instruction. Superior problem-solving, communication and interpersonal skills are essential.

Courseware Writer

Help shape courseware products by applying your expertise in course writing and the CAI authoring language. Implement the course design and production script by programming with the use of authoring tools, and writing/programming course material. Participate in new course development. Requires a minimum of 3 years' industry-related writing/training experience, an interest in programming, and familiarity with using application programs. Effective problem-solving and interpersonal skills required.

For the preceding positions, send resume with salary history (specifying position of interest) to Ellen Wyman, Wang Laboratories, Inc., Dept. CW328, One Industrial Avenue, Lowell, MA 01851.

If you're in the Boston area on Monday or Tuesday, March 28 & 29, plan to attend the Wang R&D Open House at Stouffer's Bedford Glen Hotel, 44 Middlesex Turnpike, Bedford, MA, from 6-9 p.m.

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Director of Division of Information Systems Management Faculty Member

Requires experience in computer science course instruction; innovative curriculum development, implementation and management; ability to work well with faculty and administration; and ability to counsel non-traditional students. Candidates should have a Doctorate or Masters in Computer Science, Information Systems Management or related field. Desired experience includes computer center management, development of large scale information processing systems and creative design and implementation of computer systems on a cost effective basis. Individuals with a demonstrated ability in soliciting and obtaining private and public grants will be given preference.

Send resume by April 5th to: **Dr. Mary DeCarlo**

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Responsibilities include:

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- Provide user services including data and information analysis, "User" systems development support and software tools development.
- Conduct technical/user system reviews.

APPLICATION SUPPORT/USER SERVICES MANAGER

Responsibilities include:

- Provide management for a team of programmer/analysts to provide a full spectrum of services to corporate users.
- Perform support analysis, scheduling/reporting, support software and documentation development, personnel management and Quality Control.

DESIGN PROGRAMMER/ANALYST

Responsibilities include:

- Develop corporate business systems, from analysis to integration with the appropriate documentation.
- Perform project leader functions on request.
- Conduct technical/user system reviews/walkthroughs.

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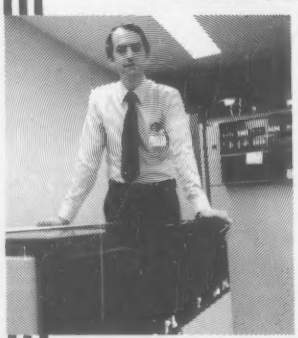
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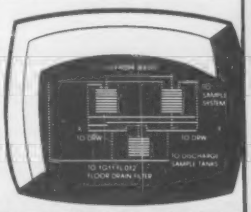
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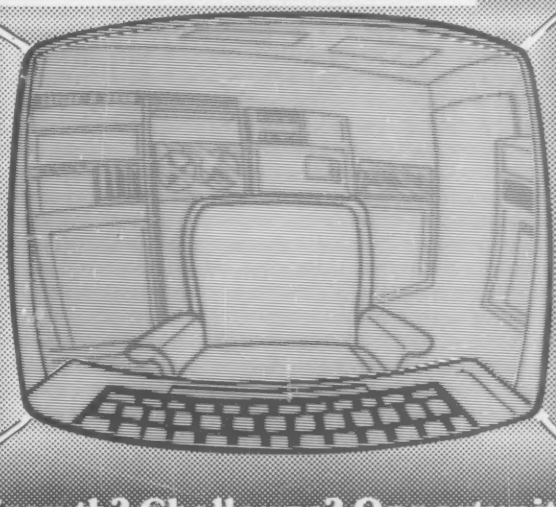
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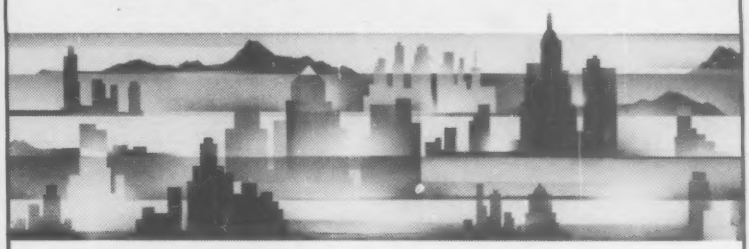
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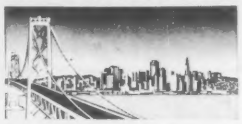
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Information Resource Management is a concept recently endorsed by the Bank that brings together data processing, office technology, and electronic communications networks. The IRMD is the central organization responsible for planning, policy, consulting, and operation of the Bank's major computer systems.

This position was created to provide centralized staff support to IRMD line management. The primary objective of the RMU is to monitor and evaluate the utilization of departmental resources to ensure an efficient and cost-effective operation in a charge-back environment. The position has both an intra-departmental and Bank-wide focus. Within the IRMD, the RMU Chief must be innovative and creative in the development of many new computer systems, including a billing/accounting system, and various performance evaluation systems. The RMU develops all IRMD intra-departmental policies, procedures, and standards.

Outside the IRMD, the incumbent is required to interact with a variety of Bank staff to audit decentralized computer systems and assess service delivery versus established service levels and develop or coordinate the development of approaches to improve resource performance.

The successful candidate must display a wide range of Managerial and Technical skills in:

i) overseeing the design, implementation, maintenance, and monitoring of various integrated Management accounting and control systems;

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iii) providing the Department ongoing services in the areas of budgeting, billing, procurement, and contract administration and general administrative support;

iv) evaluating the obligation and performance of all financial, information processing, and other physical resources managed or monitored by the Department;

v) serving as a source of technical review and assessment capability, both for Departmental Managers and user community, for matters requiring resolution, modification, and development of altenative solutions and ensuring the implementation of the selected option.

MINIMUM REQUIREMENTS

1) Master's degree in Business or Public Administration or its equivalent.

2) Broad and extensive knowledge of financial, administrative, and technical management systems.

3) Experience in establishing and running a charge-back billing system in a complex organization setting.

4) Proven ability to manage in a complex, dynamic, project-oriented business environment, indicating good planning and organizational skills and an understanding for the need for controls, systems maintainance, and monitoring.

The World Bank offers a competitive salary and benefits package. The position is based at the Bank's Headquarters in Washington, D.C. Please send a detailed curriculum vitae, quoting reference No. 3-3-USA9801 to:

The World Bank
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1818 H Street, N.W.
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University of the District of Columbia
Department of
Computer Information & Systems Science
929 E St. Northwest, Room 400
Washington D.C. 20005
Attn.: Euguene T. Dolan, Acting Chairman

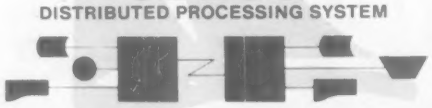
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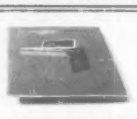
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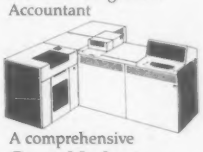
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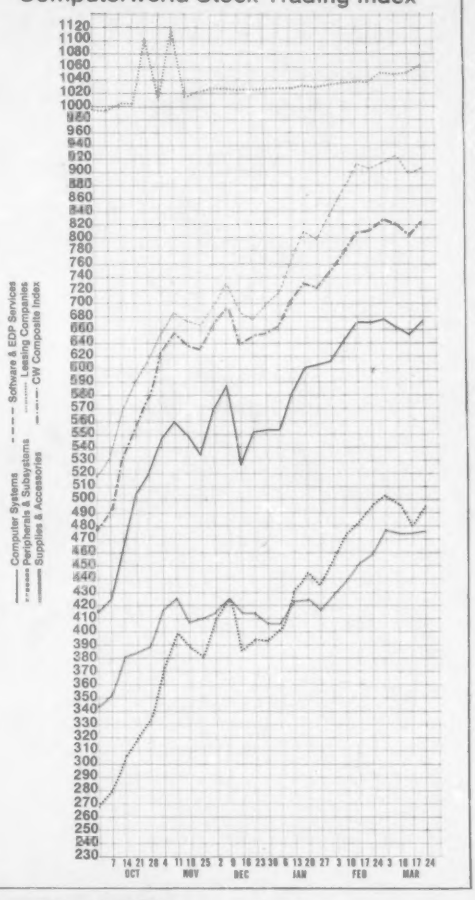
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Phone: (617) 879-0700, Telex: 95-1153.

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Computerworld Stock Trading Summary

TRADE QUOTES

CLOSING PRICES WEDNESDAY, MARCH 23, 1983

All statistics compiled, computed and formatted by TRADE QUOTES, INC Cambridge, Mass. 02139

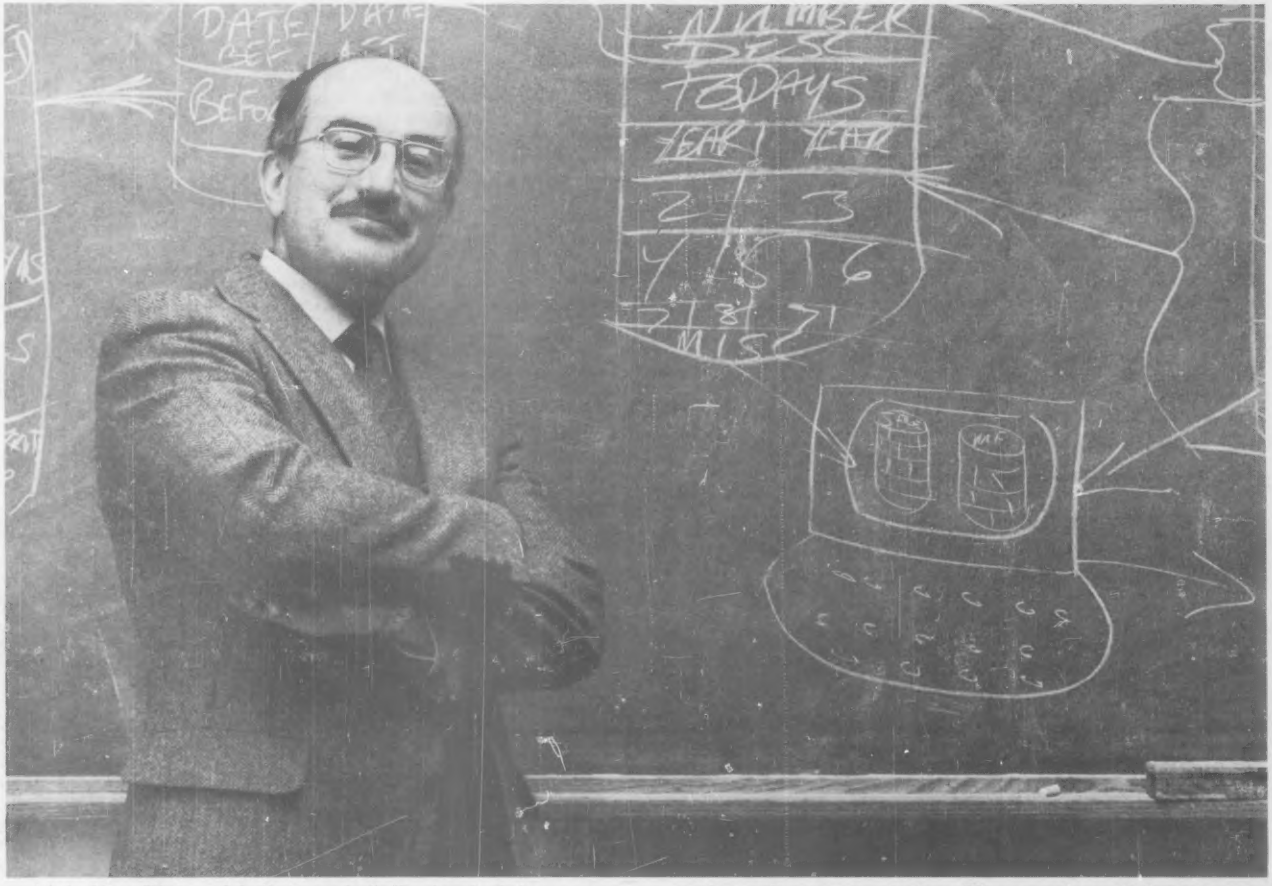
EXCH		1982-83 RANGE (1)	CLOSE MAR 23 1983	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
A	AMDAHL CORP	17- 44	43 1/2	+4 3/8	+11.1
N	BURROUGHS CORP	28- 49	45 7/8	+ 3/8	+0.8
O	COMPUTER AUTOMATION	7- 17	13 3/8	-1 7/8	-9.3
N	CONTROL DATA CORP	21- 51	48 1/8	+2	+4.2
N	CRAY RESEARCH INC	20- 48	43 5/8	+2 3/8	+5.7
N	DATA GENERAL CORP	20- 61	59	+3 1/8	+5.5
N	DATAPOINT CORP	11- 36	23 1/4	+ 5/8	+2.7
N	DIGITAL EQUIPMENT	62-132	127 1/4	+1 3/4	+1.3
A	EECO INC	8- 12	11 7/8	+ 3/4	+6.7
N	ELECTRONIC ASSOC.	5- 12	10 1/8	+ 3/4	+8.0
N	FLOATING POINT SYST	18- 37	35	+1 1/2	+4.4
N	FOXBORO	22- 43	37 1/8	+ 5/8	+1.7
O	FULCRUM COMP GRP	1- 3	1/4	0	0.0
O	GENERAL AUTOMATION	3- 8	8 1/2	+ 1/8	+1.5
N	HARRIS CORP	20- 51	45 3/4	+1 1/2	+3.3
N	HEWLETT-PACKARD CO	36- 87	83 1/8	+2 1/2	+3.1
N	HONEYWELL INC	80-104	95	+ 1/2	+0.5
N	IBM	57-103	102 1/8	+3 1/4	+3.2
O	IPL SYSTEMS INC	5- 11	8 1/4	+ 1/4	+3.1
O	MAGNUSON COMP SYSTS	2- 5	3	0	0.0
N	MANAGEMENT ASSIST	7- 18	18 1/2	+ 7/8	+5.5
O	MINI-COMPUTER SYST	1- 2	1	0	0.0
N	MODULAR COMPUTER SYS	8- 15	10 1/8	-1 1/2	-12.8
N	MOHAWK DATA SCI	10- 18	16 7/8	+1 3/8	+8.8
N	NCR	38-113	112 3/4	+7 1/4	+6.8
N	PERKIN-ELMER	17- 33	28 1/2	+ 1/4	+0.8
N	PRIME COMPUTER INC	18- 45	42 3/4	+3	+7.5
N	SPERRY CORP	21- 38	35 3/8	+1 1/4	+3.8
O	TANDEM COMPUTERS INC	14- 34	27 1/4	+1 1/2	+5.8
N	TEXAS INSTRUMENTS	71-176	168 1/8	+7 1/8	+4.4
A	WANG LABS "B"	13- 37	33 1/2	+2 1/2	+8.0
A	WANG LABS "C"	11- 37	33 1/2	+2 1/2	+8.0
	LEASING COMPANIES				
O	BOOTHE FINANCIAL CP	22- 38	32 1/2	+ 1/4	+0.7
N	COMDISCO INC	7- 28	24 1/4	+1 3/8	+6.0
B	COMMERCE GROUP CORP	1- 1	3/8	+ 1/8	+50.0
O	COMPUTER INVSTRS GRP	1- 2	1/2	0	0.0
O	CONTINENTAL INFO SYS	5- 21	20 1/2	+ 1/2	+2.5
N	DPF INC	5- 14	12	0	0.0
O	ITEL	1- 3	1	0	0.0
O	LEASPAC CORP	1- 2	1/8	0	0.0
N	U.S. LEASING	18- 41	40 1/2	+ 1/2	+1.2

EXCH: N=NEW YORK; A=AMERICAN; P=PACIFIC; B=BOSTON; L=NATIONAL; M=MIDWEST; O=OVER-THE-COUNTER
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

EXCH		1982-83 RANGE (1)	CLOSE MAR 23 1983	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 4	3 3/4	- 1/4	-8.2
O	ADVANCED SYSTEMS INC	9- 24	21 3/4	+ 3/4	+3.5
O	ADS COMPUTERS INC	7- 22	17 1/2	- 3/4	-4.1
N	ANACOMP INC	9- 22	21 7/8	+2 3/8	+12.1
O	ANALYSTS INTL CORP	5- 10	10	+1	+11.1
A	APPLIED DATA RES.	18- 30	30 1/4	+2 1/8	+4.4
O	ASK COMPUTER SYSTEMS	12- 29	29 7/8	+ 3/8	+1.2
B	ASTRADYNE CORP IND	1- 5	4 3/4	+1	+26.8
N	AUTOMATIC DATA PROC	21- 40	38 1/4	- 1/4	-0.8
O	CGA COMPUTER ASSOC	5- 14	13 3/4	- 1/2	-3.5
O	COMPUTER ASSOC INT'L	12- 47	40 1/4	0	0.0
O	COMPUTER HORIZONS	2- 12	17	+2 1/2	+17.2
O	COMPUTER NETWORK	4- 10	8 1/2	+ 5/8	+7.9
N	COMPUTER SCIENCES	11- 23	18 7/8	0	0.0
O	COMPUTER TASK GROUP	8- 18	18 3/4	+ 1/4	+1.3
O	COMPUTER USAGE	2- 22	16 1/4	-3 1/4	-16.6
O	COMPUTONE SYSTEMS	15- 38	24	-7	-22.5
O	COMSERV CORP	11- 20	18	- 1/4	-1.5
O	COMSHARE	8- 13	11 1/4	- 1/4	-2.1
N	CULLINET SOFTWARE	12- 35	32	+1 1/4	+4.0
O	CYCARE SYSTEMS INC	8- 18	18 3/8	0	0.0
O	DATA DIMENSIONS INC	1- 2	1/4	0	0.0
O	DATATAB	0- 2	5/8	- 1/8	-16.6
O	DYATRON CORP	2- 4	3 1/2	0	0.0
N	ELECTRONIC DATA SYST	18- 58	57 3/4	- 1/4	-0.4
N	INFORMATICS INC	10- 28	28 3/4	+1 1/4	+4.5
O	INSYTE CORP	1- 3	1 7/8	0	0.0
O	IPS COMPUTER MARKET.	1- 2	1 1/8	0	0.0
O	KEANE ASSOCIATES	4- 8	7 1/2	0	0.0
A	LOGICON	12- 36	35 3/4	+ 1/2	+1.4
O	MNGT SCI AMER INC	8- 28	23 1/4	+ 1/4	+1.0
O	MATHEMATICA INC	12- 22	18 1/2	+ 1/4	+1.3
O	MATHEMATICAL APP ORP	12- 22	18 1/2	0	0.0
B	NATIONAL DATA CORP	5- 24	20 1/2	- 1/2	-2.3
O	PANSOPHIC SYSTEMS	8- 25	23 1/4	- 1/4	-1.0
N	PLANNING RESEARCH	8- 18	15 1/4	+1 3/8	+9.9
O	PROGRAMMING & SYS	1- 4	3 1/8	- 3/8	-10.7
O	REYNOLDS & REYNOLD	17- 39	38 3/4	+ 1/2	+1.3
O	SEI CORP	11- 23	21 5/8	+ 1/8	+0.5
O	SHARED MEDICAL SYST	13- 38	34 1/8	+3 1/8	+10.0
O	SCIENTIFIC COMPUTERS	8- 13	12 1/4	- 1/4	-2.0
O	SOFTWARE AG	5- 17	8 7/8	- 3/8	-4.0
N	TYMSHARE INC	12- 30	23	+ 3/8	+1.6
A	URS CORP	5- 14	13 1/4	+ 1/2	+3.8
N	WYLY CORP	7- 13	12 5/8	+ 7/8	+7.4
	PERIPHERALS & SUBSYSTEMS				
A	AM INTERNATIONAL	2- 4	3 1/2	+ 1/8	+3.7
A	ANDERSON JACOBSON	9- 28	18 1/2	+ 1/2	+2.7
B	AUTO-TROL TECHNOLOGY	8- 21	14 3/8	- 5/8	-4.1
O	BANCTEC INC	7- 33	17 3/4	+1	+5.8
A	BEEHIVE INT'L	4- 11	10 5/8	+ 3/8	+3.8
A	BOLT-BERANEK & NEW	13- 40	38	+1	+2.8
O	CAMBEX CORP	2- 4	1 3/4	- 1/4	-12.5
N	CENTRONICS DATA COMP	8- 20	17 7/8	+ 1/4	+1.4
A	CETEC CORP	4- 8	8 1/8	+1 1/4	+15.8
O	COGNITRONICS	2- 14	12	+ 3/8	+3.2
O	COMPUTER COMMUN.	1- 2	1 3/8	0	0.0

EXCH		1982-83 RANGE (1)	CLOSE MAR 23 1983	WEEK NET CHNGE	WEEK PCT CHNGE
A	COMPUTER CONSOLES	15- 44	36 1/4	-2 1/8	-5.5
O	COMPUTER DEVICES INC	4- 21	14 1/2	+ 7/8	+6.4
O	COMPUTER TRANSCEIVER	4- 9	8 1/8	+ 3/4	+8.9
N	COMPUTERVISION CORP	18- 45	41 1/8	+1 3/8	+3.4
N	CONRAC CORP	21- 36	32 7/8	+1 7/8	+6.0
A	DATA ACCESS SYSTEMS	1- 4	1 1/2	0	0.0
A	DATAPRODUCTS CORP	18- 41	22 5/8	+2 5/8	+13.1
A	DATARAM CORP	5- 12	11 3/4	+1 1/2	+14.6
O	DATUM INC	2- 12	11 3/4	+2	+20.5
O	DAVID JAMISON CARLYL	2- 7	3 7/8	- 3/8	-8.8
O	DECISION DATA COMPUT	3- 14	10 3/4	0	0.0
O	DELTA DATA SYSTEMS	1- 8	3 1/4	+ 1/8	+4.0
N	ELECTRONIC M & M	5- 10	10	+1	+11.1
O	EVANS & SUTHERLAND	18- 50	42	+ 1/4	+0.5
O	GANDALF TECHNOLOGIES	10- 22	16	- 3/8	-2.2
N	GEN'L DATA COMM IND	6- 18	14 7/8	-1 3/4	-10.5
O	GENERAL TERMINAL CP	0- 2	7/8	+ 1/8	+16.6
O	GREAT SOUTHWEST IND	2- 6	3	0	0.0
N	HAZELTINE CORP	22- 64	63 3/4	+5 7/8	+10.1
O	ICOT CORP	3- 10	8 3/4	+2 1/8	+28.6
O	INFORMATION INTL INC	10- 22	18	- 3/4	-3.7
O	INTEL CORP	21- 48	47 1/2	+ 1/4	+0.5
O	IPL SYSTEMS INC	5- 11	8 1/4	+ 1/4	+3.1
A	LUNDY ELECTRONICS	7- 16	13 3/4	+ 3/4	+5.7
A	MSI DATA CORP	14- 36	18 7/8	0	0.0
O	NETWORK SYSTEMS CORP	15- 43	38 1/2	- 3/4	-1.9
O	OMEX	3- 5	3 1/2	0	0.0
A	PARADYNE CORP	16- 34	34 5/8	+3 5/8	+11.6
A	PENRIL CORP	7- 13	11 3/8	-1 1/8	-9.0
O	RAMTEK CORP	12- 28	22 1/4	+ 1/2	+2.2
N	RECOGNITION EQUIP	4- 13	9 7/8	- 3/8	-3.6
O	SCAN DATA	1- 3	1 3/8	0	0.0
N	STORAGE TECHNOLOGY	18- 33	22 1/4	+ 5/8	+2.8
O	SYKES DATATRONICS	6- 27	10 1/8	+1 3/4	+20.8
A	T BAR INC	7- 14	12 3/8	+ 3/8	+3.1
A	TAB PRODUCTS CO	8- 25	24 1/2	+1 3/4	+7.8
A	TEC INC	8- 12	7 7/8	- 1/4	-3.0
N	TEKTRONIX INC	34- 75	69 3/8	+ 1/8	+0.1
N	TELEX	5- 27	24	+1	+4.3
O	TESDATA SYSTEMS CP	3- 10	8	+ 7/8	+10.7
N	TIMEPLEX INC	7- 24	18	-1 1/8	-5.5
O	VISUAL TECHNOLOGY	8- 20	18 1/4	- 1/4	-1.2
O	WILTEK INC	1- 3	2 1/2	- 3/8	-13.0
	SUPPLIES & ACCESSORIES				
N	AMERICAN BUS PRODS	11- 22	20	- 5/8	-3.0
O	BALTIMORE BUS FORMS	1- 2	1	0	0.0
N	BARRY WRIGHT	13- 25	24 3/4	- 1/4	-1.0
O	CYBERNATICS INC	1- 1	1 1/4	0	0.0
A	DUPLEX PRODUCTS INC	12- 21	20 3/8	- 1/8	-0.6
N	ENNIS BUS. FORMS	18- 33	32 5/8	+1 1/8	+3.5
N	3M COMPANY	48- 82	80	+2	+2.5
N	MOORE CORP LTD	28- 47	46 3/4	0	0.0
N	NASHUA CORP	8- 18	13 1/4	- 5/8	-4.5
O	STANDARD REGISTER	32- 88	83	0	0.0
N	WALLACE BUS FORMS	22- 38	32 1/2	0	0.0

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